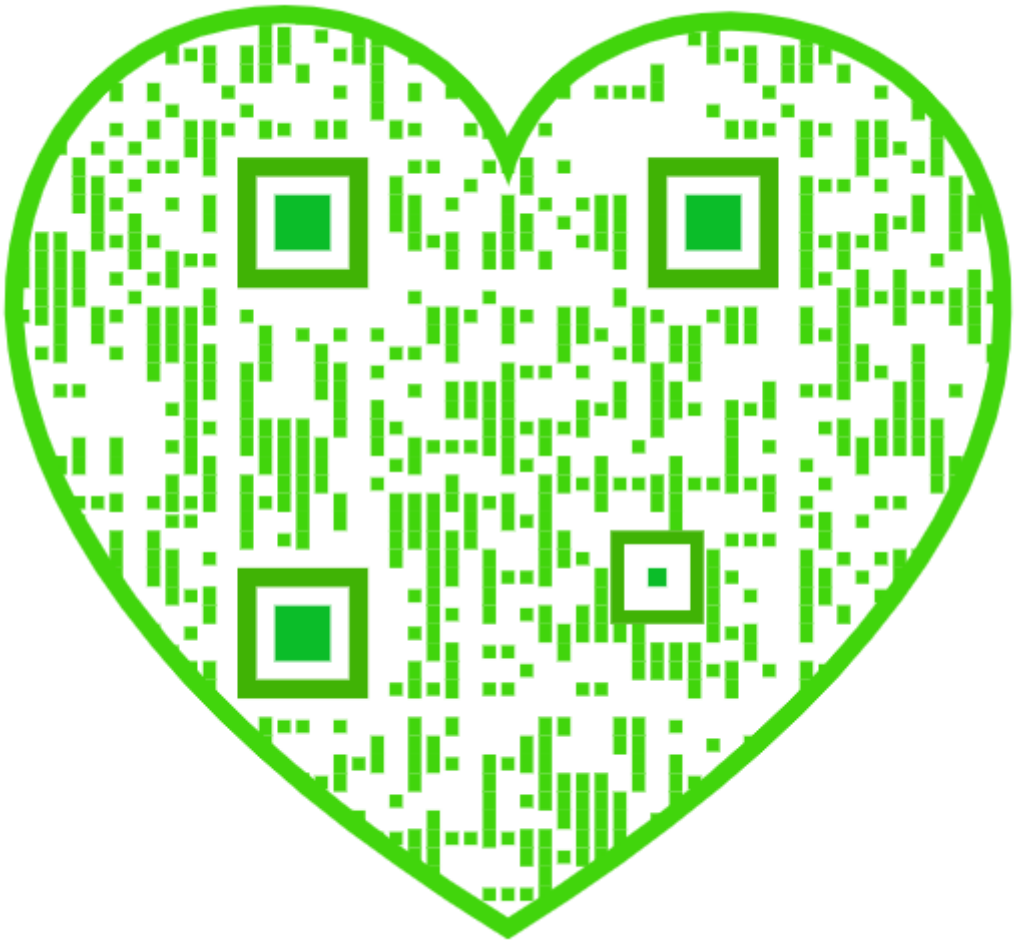

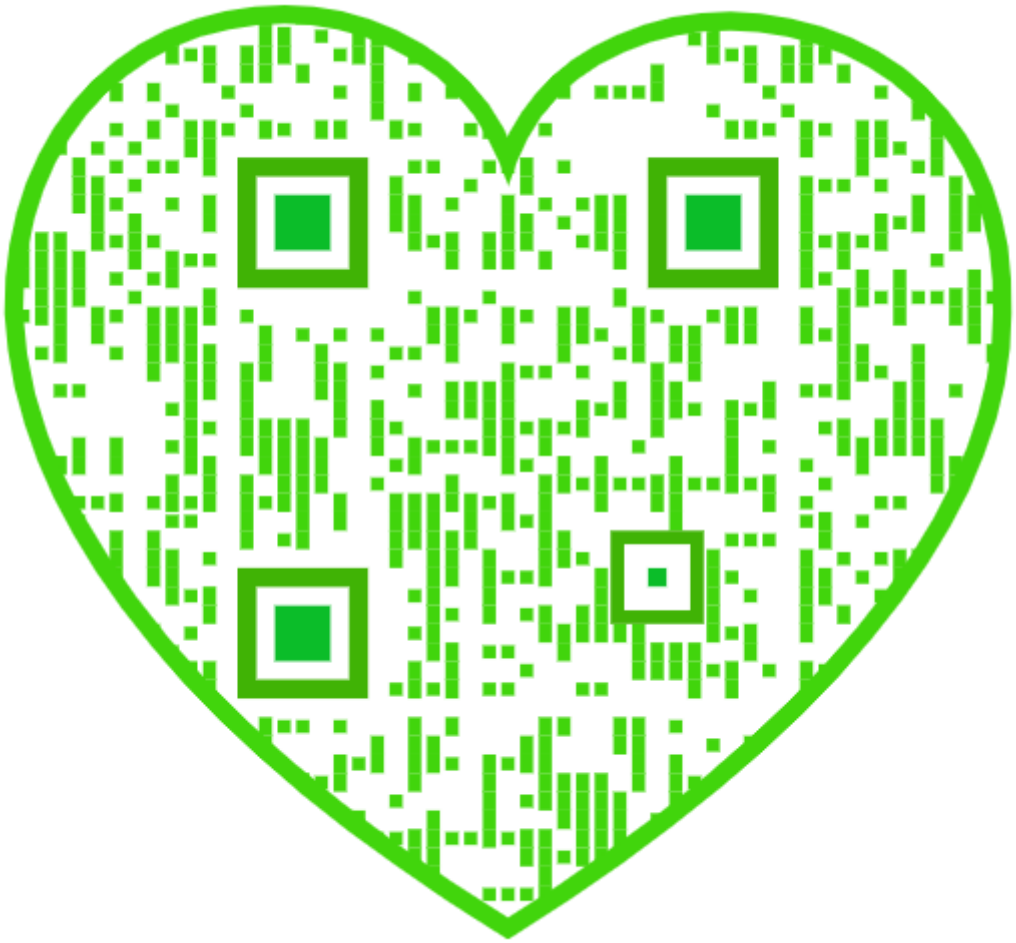

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THE WAY WE DID

AT COOKING SCHOOL.

BY

VIRGINIA REED,

Editor of "Daily Cheer for All the Year."

NEW YORK

AMERICAN PUBLISHERS CORPORATION

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Copyright, 1896,
BY
VIRGINIA REED.

THIS BOOK IS DEDICATED

TO

THE SIX

WHO, TOGETHER WITH VIRGINIA REED, COMPRISED

THE NORMAL CLASS

AT

THE PHILADELPHIA COOKING SCHOOL

FOR THE

SCHOOL YEAR OF 1894-5.

" Not to know at large of things remote
From use, obscure and subtle, but to know
That which before us lies in daily life,
Is the prime wisdom."

—MILTON.

PREFACE.

BELIEVING that the information acquired by some persons at the cost of considerable time and money would be interesting to others, and also be appreciated and enjoyed by many who have not the time or money to spend in thus gaining knowledge, this volume has been most carefully prepared, with the hope of gratifying those less fortunate in this respect than the writer.

June, 1896.

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THE WAY WE DID AT COOKING SCHOOL.

LETTER I.

"Going to cooking school? What put that idea in your head?"

"When I was at the Columbian Exposition I heard one of the Scientific Cooking Teachers say that the women are responsible for the greater part of the dyspepsia and drunkenness in the world, because they do not cook the food properly, even when they do select the proper articles for cooking. Now, if that is true I would like to understand cooking from a scientific standpoint."

"And so would I. I am sure I would do all I could to prevent my baby boy from ever suffering from either cause. Are you not afraid to go so far away among strangers?"

"One thousand miles is a long way from home, I know, but the school officials have promised to meet me, so I feel easy about going."

"How will they know you?"

"I sent them a piece of my traveling dress and told them what train I would be on; so that is all right. Grandma approves of my going. She said only this afternoon: 'I think it is a very sensible idea. If more of the girls took an interest in such work they would benefit themselves as well as their home folks, and be happier and more contented.'"

"I wish I too were to have the advantages of at-

tending such a school. I feel my incompetency so often."

"Oh, never mind, Cousin Alethea; I shall write and tell you every little thing."

"Thank you. You are very kind, indeed. I never would have dared to ask such a great favor of you. Really, I fear that with all your other duties you will not have time for so much writing."

"Writing down everything will help to impress it on my own mind. So do not be uneasy; I shall receive as much benefit as any one."

"When do you leave for the East?"

"Day after to-morrow. Look out soon for letter number one."

"I am glad you have one more day here. I shall see you again before your departure."

October 15, 189–.

My Dear Cousin Alethea: The long journey is over without an incident worth telling. They met me as they promised and accompanied me to a boarding place where three other of the cooking school pupils are boarding. It seems to be a very pleasant place and is near the school.

The main schoolroom is longer than wide, with three windows on the west. In this room there are two long, narrow tables; these tables are placed parallel with an aisle between them. At the south end of the aisle is the stool upon which the teacher sits in front of a small table. The long tables have drawers in them opening on the sides next the wall. Each one of us has a special drawer assigned her; so her place is always by that drawer.

Each drawer contains a salt dredge and pepper dredge; two measuring cups, holding a half-pint each; one cup is divided into thirds and the other into fourths; two teaspoons; one tablespoon; one spatula; one common knife and fork; one narrow, sharp-pointed knife for paring and boning; a small sieve; a flour dredge; a rolling pin; a glass lemon squeezer; and a

wooden spoon. A bread board slips in above each drawer.

Under each table is a shelf on which are placed wooden and granite-ware bowls used in mixing, and the different dishes and pans used in baking, and also whip-churns of various sizes.

Against the wall, opposite the windows, stand the refrigerator and a dresser; on the dresser and mantel are placed the molds and cutters of various fancy forms, and a few plates and other dishes.

At the south there is a closet where we put our wraps. This closet also contains two cupboards, in which part of the provisions used in cooking are kept.

On the north wall are two cabinets, where the food substances that have been analyzed are kept in bottles. Between these cabinets is a large arch, which opens into a small room containing a coal stove, of the variety which some people call a portable range. This stove has a gauze door.

In this small room the flour bins are fastened to the wall. The saucepans, kettles, farina boilers, chopping tray and cutter, quart measure, funnel, meat grinder, and a tray containing trussing and larding needles are kept on shelves. Under the shelves are hung the frying pans, omelet pans, broilers, and gem pans. On the one long table this room contains stand boxes of sugar and spices. The other table in this room is a round marble-topped one.

Still further to the north is a smaller room provided with hot and cold water and furnished with one table, upon which all the soiled utensils are washed by a colored girl.

You perceive everything is conveniently arranged for us, and we are seven—six girls and one married woman.

Each day so far we have prepared a lesson from a small Question Book published by the principal of the school. We find the answers to these questions by consulting various books of reference. We were told to provide ourselves with a copy of "The Handbook

of Household Science," by Edward L. Youmans, M.D., and "A Treatise on Food and Dietetics," by F. W. Pavy, M.D., F.R.S., and "The Chemistry of Cookery," W. Mattieu Williams, although there are other works which it is very nice to have for occasional reference, such as "The Chemistry of Common Life," by James F. W. Johnston, revised by Arthur Herbert Church, and "Food," by A. H. Church.

I will write out now the questions and answers we have had.

What is a range? A range is an iron box used for cooking. The flues are built in a wall of brick and mortar to which this iron box is attached. The range is divided into different chambers. The coal chamber should be large enough to hold coal sufficient to keep a fire hot for a long time. There is a draft at the top of the coal chamber; below this there is a place for ashes with a draft on the lowest level. The oven occupies the remaining space, with two flues above and below. The heat circulates over the top of the oven, then down the back and through the lower flues finally rising to the top of the oven at the further back corner.

What is a stove? A stove used for the same purpose is made on the same plan with this exception: it contains its flues within itself, and therefore can be moved from place to place.

What is the difference between a range and a stove? The difference between a range and a stove is in the arrangement of the flues. The range has been built in the brick and mortar wall, while the stove has them built within itself.

Describe the draught of a chimney? The hot gases and the surrounding heated air expand because rarer and lighter, and since the atmospheric particles move among each other with the most perfect freedom, the colder and heavier air takes the lower position, and by so doing pushes the warm air upward. The cold air becomes heated and ascends, and other takes its place, so a continuous current is established.

Why do new chimneys smoke? New chimneys smoke because the brick and mortar being damp form good conductors of heat, and take it from the rising current of warm air. This then condenses and obstructs the ascent. When the chimney becomes dry and is covered with non-conducting soot this source of trouble is removed.

What is the difference between a flue and a chimney? The flue is the passage for heat, while the chimney is the passage for waste.

What is fuel? Fuel is anything that gives out heat during the process of combining with the oxygen of the air.

What is necessary to kindle a fire? Friction or percussion is necessary to generate heat sufficient to start combustion.

For kindling coal, which is the better, hard or soft wood? Soft wood in the form of charcoal.

Explain the difference between hard and soft wood. The harder and heavier woods have their fibers more densely packed together than the soft and lighter woods, and even when of the same species those growing in dry soil or exposed in open fields are more consolidated than those growing in wet ground or in forests.

What takes place after the combustive process has commenced? The fuel disappears and the air is changed.

Is the substance of the fuel destroyed? No.

What becomes of it? It has merely changed its form to that of smoke, gas and ashes

Why do soft woods burn more readily than hard woods? Chiefly on account of the difference in chemical composition. Soft woods, being loose and spongy, admit the air more freely.

What is coal? Coal is organic matter that has undergone heat and pressure. It contains carbon, hydrogen, oxygen, nitrogen, and a little sulphur.

Describe the different kinds. Hard coal has been subjected to great pressure, which has expelled the

gases through the porous covering. The greater the pressure the harder the coal. Where the gases could not escape bituminous coal was formed. Anthracite is the hardest of all, and lignite the softest. Lignite still retains the woody structure and is the least charred. There are many degrees of density between the two.

Which would you use for cooking purposes? Hard coal.

Which is best for cooking, large or small coal? A coal about the size of an English walnut called chestnut.

Why must we use wood to kindle coal? The great density of the coal makes it slow to burn, so that we have to use wood in the form of charcoal in order to raise the heat of the whole mass to the point of ignition before it can burn.

How should a fire be "fixed" to keep over night? Close the lower draught so that the fire cannot burn so rapidly, and open the upper draught so as to keep the top of the coal cool, and the fire will stay fixed over night.

Why does a coal fire remain stationary after it is "fixed?" The fire remains stationary because the coal does not have a chance to become heated so as to burn rapidly, and yet has heat enough to keep it from going out.

Why must you have an excess of air to kindle a coal fire? You must not. An excess of air would reduce the temperature below the point of ignition and the coal could not burn.

Is it necessary to use lighter material for kindling wood? It depends somewhat on the wood you are using. Soft wood, like pine, in the form of shavings or fine splinters will start a fire if touched by a lighted match.

Describe coke—charcoal. Coke is the residue left after charring bituminous coal. Charcoal is the residue left after wood has been slowly burned in an enclosed place with but a limited supply of air.

What fuel produces the largest amount of heat? Wood charcoal.

What is gasoline? Gasoline is the lightest, most volatile liquid produced by the distillation of petroleum.

Describe a gasoline stove, and tell how to use it. A gasoline stove is an iron table with rows of burners. The tank for gasoline is placed above and at the back and is connected with each burner by a tube. Turn a stop cock and the gasoline falls on a metal plate at the burner a drop at a time and when ignited generates the gas that burns. Place the vessel containing the article to be cooked over the lighted burner and let it cook as on any other kind of a stove.

What is coal oil? Coal oil is a fluid taken from coal beds or deposits, and is a product of distillation from bituminous coal.

Describe a coal-oil stove and tell how to use it. A coal-oil stove consists of a standard which supports a tank holding the oil. To this tank is fitted a burner which holds the wick, one end of which is immersed in the oil. A piece of gauze is fitted around the burner which makes the current of air, from below, more uniform. A metal frame surrounds the burner upon which the cooking utensils rest. The wick is saturated with oil which when ignited heats whatever is placed above it. You raise or lower the wick as you wish to increase or decrease the amount of heat.

What is gas? Gas is chiefly produced from bituminous coal which is placed in tight cast-iron vessels called retorts. These retorts are fixed in furnaces and heated to redness by an external fire. The high heat decomposes the coal, producing gaseous and liquid compounds. The gaseous products are separated from the liquid and then purified.

Describe gas stoves and tell how to use them. A gas stove consists of an iron box divided into compartments with the broiler at the bottom, the oven in the middle and with rows of burners on top. A tube connects the burners with the gas supply. You turn

a stop cock and the gas flows along to the top of the burner, where you set it on fire by applying a lighted match. The openings in the burners are made in various ways. On the variety of the burner and the amount of pressure under which the gas flows depend the quality of the gas flame. You place the article to be cooked in a vessel on the iron framework above the lighted gas.

Which is best and why? That having an Argand burner because the air coming up in the center as well as around the outside mingles with the gas and so supplies enough oxygen to consume all the gas in burning and yet does not supply more than is needed.

Do coke and charcoal require different drafts from other fuel? Coke burns more readily than anthracite but requires about the same draft as coal. Charcoal ignites more readily than wood and burns easily in a coal or wood stove or when exposed in the open air.

Describe the process of building fires. Examine the grate to be sure it is properly turned, then place some light material on it, and then some wood, and lastly some coal. Open the lower draft and apply a lighted match to the light material first put in place.

A professor lectures to us each week on chemistry and we have to write a report of the lecture and pass it in for correction. This week the lecture was on fuel. When my report has been returned to me, I will copy it for you.

The weather here is truly beautiful, but being among strangers I have not seen enough of the city to tell you anything about it.

With love to the home folks, I remain,

Your affectionate cousin,

VIRGINIA REED.

LETTER II.

October 26, 189–.

My Dear Cousin Alethea: I will now copy my report of the lecture on Fuel.

Our fuels consist mainly of carbon and hydrogen. Combustion, in general, is a rapid union of a substance with oxygen, and is accompanied by heat and light. In fermentation, decay, putrefaction and fire the process is identical in regard to the chemical change.

Charcoal, coke and anthracite possess the most carbon of our common fuels, and therefore give forth the most heat in burning.

Alcohol, oil and wood contain more hydrogen than the other fuels, and consequently have greater illuminating power.

In a flame there are three divisions. The blue or innermost part being the carbon and hydrogen which is not ignited and therefore will not burn you. In the next division the hydrogen has united with the oxygen and gives a bright light by heating the carbon to white heat before burning the carbon. The third division is a fringe surrounding the bright part, but we do not see it until something like dust, table salt, or soda is thrown into the flame.

The carbon that is heated is afterward consumed and goes off as a gas, unless there is a good deal of it, when it may appear as smoke. When the carbon comes in contact with a colder surface, it will deposit soot.

Alcohol contains so little carbon that it burns mostly at once, while turpentine contains so much that it makes a smoke. Turpentine to burn with a clear light requires an extra amount of oxygen. Turpentine

and alcohol mixed together in due proportion correct each other and burn with a pleasant light. This combination is called camphene or burning fluid, and is a dangerous explosive.

Gas can be made to burn with a non-luminous flame by admitting more air to it before it is ignited. When gas burns with a noisy flame and is green within it is in a dangerous condition and should be turned off unless you can diminish the quantity of the air or increase the flow of the gas.

The professor stated again that hydrogen having such an affinity for oxygen combines with it, and in burning heats the carbon to a white heat before burning the carbon, and when a fuel does not possess enough hydrogen to generate gas sufficient to heat all the carbon to that point, the carbon would not be entirely consumed, but would go off as smoke. It is the carbon heated to a white heat that gives the brightness to a flame.

The professor performed the experiment of making charcoal in a test tube and in so doing generated wood-gas and burned the gas at the mouth of the tube. In this gas there are from fifteen to twenty different ingredients. One is acetic acid, from which a great deal of the so-called white wine vinegar of commerce is made by adding water. Another ingredient is wood alcohol and another tar; beechwood tar yields the most creosote. It is the creosote that is so irritating in smoke. In burning wood in free air these gases are burned as soon as formed; at least there is a very small amount that escapes.

The Davy lamp and Bunsen burner were explained. They are a variation of the same principle. In the Davy lamp a wire gauze is used, being composed of tubes about one-twentieth of an inch in length and very narrow in diameter, yet you can burn gas either side of the gauze and the flame will not pass through. In the Bunsen burner a long tube is used and the gas is burned at the top of the tube. The tube, of course, is wider than the other in order to correspond with its

length, and since the air is admitted below and mingles with the gas before it is ignited the heat will be intense and there will be no smoke or soot.

The Davy lamp is used in mines to avoid explosions from fire damp. When the flame grows pale and enlarges it shows the presence of fire damp. Indeed this gas will burn within the gauze but there is no danger of an explosion so long as the gauze remains perfect and cool.

Bunsen's burner is used particularly in laboratories.

Hydrogen burns entirely, but carbon has such an affinity for oxygen that it cannot always obtain a supply. To entirely consume the carbon every twelve grains of carbon require thirty-two of oxygen, yet twelve grains of carbon will ignite with sixteen of oxygen. In the latter case it gives off a deadly gas, and we cannot tell by observation which is being formed, because both gases are colorless and odorless. Both may, indeed, be formed in a stove at the same time. The poisonous gas may be changed into the other by a free admission of air. We have noticed it burning with a blue flame when we have opened a door to a coal stove. It is considered a fruitful source of disease. A little at a time is absorbed into the system, and by and by the system cannot perform its functions on account of this poison, and the person dies.

We have been cooking some each day since I wrote you so we have had only thirty questions, which were those I shall now give.

Describe the different kinds of cooking utensils. Some are made for holding considerable liquid and are used for boiling or stewing; others are shallow and are used for baking or sautéing while others are merely wires and are used for broiling and toasting.

What vessels are best to keep their contents warm? Vessels of polished metal having metallic covers, as in double boilers.

Write a list of all necessary utensils in a well-furnished kitchen. One good stove or range. Of granite

or agate ware there should be one six-quart covered kettle, two teakettles, one of them flat-bottomed, one ten-quart covered soup kettle, two pint sauce pans, two one-quart sauce pans, one deep frying pan for croquettes, one Turk's-head, two two-quart covered kettles, one batter bucket, two pitchers, one wash basin, one mixing bowl, one set of gem pans, two round baking pans, one two-quart farina boiler, one teapot, one ten-quart oval soup kettle for boiling ham, two large dishpans.

Of wooden ware there should be one large bread board, one meat board, one fish board, one oval chopping tray, one potato masher, one salt box, one spice box, one butter paddle, six wooden spoons assorted sizes, one pastry brush, one small paint brush for greasing pans, two stove brushes, one scrubbing brush for tables, one scrubbing brush for vegetables, one scrubbing brush for glass and china, two wooden forks, one hardwood rolling-pin, two wooden spatulas, one knife scouring-box, one refrigerator, one floor mop and two dish mops.

Of tinware there should be one tea canister, one coffee canister, one cake box, one cracker box, one oil can, one large funnel, one small funnel, one steamer with lid, one vegetable press, one common colander, one flat colander, two small dishpans, one fine wire soup strainer, one wire frying-basket, one nutmeg grater, two large graters, one long-handled skimmer, one long-handled dipper, six moulds assorted, one quart graduated measure, six dredging-boxes for various contents, six round basins assorted, one bread box, two one-quart milk cans, two two-quart milk cans, two gravy strainers, one coffee biggin, two half-pint cups divided in thirds and fourths.

Of steel and iron ware there should be one wire dish cloth, one pair of scissors, two dripping pans, one waffle iron, one wire broiler for fish, one fine wire broiler for toast, one wire broiler for steaks, one set of scales, six bread pans, four by eight being a good size, two large spoons, one large meat fork, one butcher-

knife, two boning-knives, one sharp-pointed paring-knife, one chopping-knife, one can opener, one cork-screw, one hammer, one galvanized garbage bucket with lid, one roaster, one porcelain-lined preserve kettle, one wire kettle lifter, one freezer, six kitchen forks, six kitchen knives, one griddle spade, three baking sheets, tacks and screw-hooks.

Of earthen and stone ware there should be two jugs, two butter pots, six jars assorted, twelve baking cups, one bean-pot, six half-pint kitchen cups, six bowls assorted, four small bowls, six large soup plates for meats.

Of miscellaneous articles there should be one graduated glass measure, one jelly bag, two pastry bags, two floor cloths, two dish cloths, twelve dish towels, twelve hand towels, pudding cloths, dust cloths, cheese cloth for various purposes, twine, six holders, Harkinson kitchen table, one chair and one footstool.

Name the different kinds of materials used in cooking utensils. Iron, tinned iron plate or tin ware, copper, brass which is an alloy of zinc and copper, enameled iron ware, earthen ware, porcelain ware and aluminum ware.

Which is best and why? Enameled iron ware is the best because it resists the action of acids and is light to handle and is easily kept clean.

Describe a double boiler and give its uses. A double boiler is a covered saucepan or pail fitting into a larger one so there is space for water below and around it. It is used to cook delicate substances and for long and slow cooking.

What is the chief objection to iron for kitchen utensils? The chief objection springs from its powerful attraction for oxygen. It imparts an irony or styptic taste to many articles cooked in it. It is better in pans for baking than in pots or kettles.

What are the objections to copper? Copper is easily acted upon by aliments which are in our food and which with the copper form poisons. Vinegar,

salt, fats and sugar are some of these aliments. With vinegar it forms copper acetate and with salt copper chloride.

How can you protect copper utensils—and iron? By giving them a coat of tin.

Is zinc ever used for cooking purposes; if so, why? Zinc is unfit for cooking utensils though it is sometimes used for making moulds for freezing dishes and for milk pans. Some claim that milk will keep sweet longer in it so that more cream would arise. Even if that were true it would be because the poisonous lactate of zinc had formed in the milk. Heat causes the zinc to form a poison.

What might be called perfect cooking utensils? Granite, opal or agate ware.

What is the composition of these utensils? Iron glazed with a composition of feldspar, silica and rosin, with some other ingredient added to give the particular color.

What may be said of the glazing on earthen vessels? Vessels covered with salt glazing are good if the glazing is smooth, but the most of the glazes have lead in them and are unhealthful.

Describe the method of cleaning these various utensils. Copper utensils are cleaned with salt and vinegar. Iron utensils are cleaned with salt and suet and paper, while for tin use sand or sapolio. For granite or porcelain ware use sapolio or soap and hot water.

How are alimentary principles divided? Into simple aliments and compound aliments. Simple aliments are divided into nitrogenous, carbonaceous and inorganic.

What are simple aliments? Simple aliments are those which are capable of being separated from each other and examined independently, such as starch, sugar and glutin.

What are compound aliments? Compound aliments are made up of various simple aliments, such as grain, roots and meats.

What are the non-nitrogenous—and what the nitrogenous? Non-nitrogenous aliments are those containing no nitrogen, such as starch, sugar, gum, oil and vegetable acids. Nitrogenous aliments are those which do contain nitrogen, such as albumin, fibrin, glutin and casein.

What other element have we which belongs to neither? Water.

What is one of the most important properties of water? The power to dissolve substances placed in it.

What is this combination called? A solution.

What is a saturated solution? Water that has dissolved so much of a solid substance that it will dissolve no more is said to be saturated.

Has water the power to dissolve all substances? No.

Does it act alike on all substances? No. It acts more quickly on a powdered substance than on a solid one. One pound of water dissolves two pounds of sugar but only six ounces of salt.

Which dissolves a solid substance more readily, hot or cold water? Hot water generally, though lime is an exception which reqnires cold water.

How must you proceed to dissolve salt and sugar quickly? Why? Make a powder of them and stir the water in which they are placed, or else suspend them just below the surface of the water so the water will have access to each portion. The saturated water being heavier than the clear water falls to the bottom and so makes room for the other to absorb what it will.

Is there any perfectly pure natural water? No.

Which of the natural waters is the least contaminated? Rain water falling far away from houses and at the close of a protracted storm.

Why is boiled water flat to the taste? Boiled water tastes flat because its natural gases, or those derived from the atmosphere, have been driven off by the heat.

How can you tell the difference between hard and

soft water? Test it with soap. If soft it will make a nice lather, but if it is hard it will give a curdled appearance.

When we actually began to cook the first thing we did was to make soup stock. We have lesson cards on which are printed various recipes. They are compiled from Mrs. Rorer's Cook Book. The principle employed in preparing different dishes, if scientific, should be the same, no matter whether the "rule of proportion" is taken from the White House, the Philadelphia, the Buckeye, or the Boston Cook Book.

Soup Stock.—For the soup stock we used juicy, lean uncooked beef, because cooked or stale meat would not give a clear stock. We wiped the meat with a dampened towel and cut the meat from the bone (it was a shin bone). The meat was cut into pieces about an inch square, so the water would have a chance to act on every part. We placed the bones on the bottom of a granite kettle (a porcelain kettle would do as well), and put the meat on top of the bones. We then added five quarts of cold, soft water and stood the kettle on the back part of the range for an hour, so that the cold water might draw out all the substance it could from the meat and soften the texture. At the end of the hour we placed the kettle over a good fire. When the water began to steam and the scum had risen, we placed the kettle on a more moderate part of the fire and added a cup of cold water and skimmed off the scum. We covered the kettle and left it where its contents would simmer gently for four hours; at the end of which time we added one onion, one carrot, one turnip and one stalk of celery cut in slices, and also added two bay leaves, one sprig of parsley and twelve whole cloves, and let it simmer one hour longer. We then strained the stock through a fine sieve and added to it one tablespoon level full of salt. We placed the stock where it would cool quickly, because if kept in a warm place for a few hours it

would not form a nice jelly. When it was cold we removed all the fat from the top and it was ready to use.

VEGETABLE SOUP WITHOUT MEAT.—The same day we made soup stock we also made a vegetable soup without meat. First we washed the vegetables with a brush about four inches long, something like a scrubbing brush. We then peeled the vegetables and cut them in slices about three-sixteenths of an inch thick. You can cut them into dice-shaped pieces or else use fancy cutters and cut each vegetable into different shaped pieces. For this soup we used one carrot, one sweet potato, one turnip, one parsnip and one onion. We put one ounce of butter into a frying pan and when hot we added the vegetables and fried them a light brown. Then we turned all into a soup kettle and added two quarts of cold water, one bay leaf, one sprig of parsley, one root of celery, one level teaspoonful of salt and two tablespoonfuls of rice. After it had boiled slowly for one hour and a quarter we added one white potato which had also been cut into fancy shaped pieces. We allowed it to boil fifteen minutes longer; then we mixed one-fourth of a teaspoonful of pepper with a level teaspoonful of salt and added it to the soup, and the soup was ready to be served.

A RIB ROAST.—The next thing we did was to roast a rib of beef in the oven. First we looked after the oven to see that it was *very* hot. We wiped the meat carefully and then dredged it lightly with pepper and placed it rib-side down in a granite baking pan; then we added one level teaspoonful of salt to a half-pint of boiling water and poured it in the pan. We placed it in the oven, which was very hot, and basted it every ten minutes. As every oven has one part a little hotter than the other we turned the pan two or three times during the roasting, so that the meat would have a chance to roast evenly. It was roasted fifteen minutes to

every pound. After placing the meat on a heated plate we poured all but two tablespoonfuls of the drippings from the pan. We then added two rounding tablespoonfuls of flour, which browned in the baking pan on the top of the stove while we rubbed it smooth. To this we added a pint of water, stirring continuously until it boiled. We seasoned it with one level teaspoonful of salt and six dashes of pepper, and when we had strained it through a small sieve into a boat it was ready to serve.

Your affectionate cousin,
VIRGINIA REED.

LETTER III.

November 6, 189–.

My Dear Cousin Alethea: We are now somewhat accustomed to our studies and can accomplish, in the same length of time, much more than we did at first, and it seems more interesting. I hope you will have time to try the most of the different dishes we shall have, and if I do not explain everything satisfactorily, ask until I do. If I should not be able to answer your questions I shall try to find out, for I am here to learn.

Ventilation was the topic for our last lecture, and in order that all might thoroughly understand the meaning of the symbols used, the professor explained that the atomic weight of the different ones were hydrogen one, carbon twelve, oxygen sixteen, nitrogen fourteen, sulphur thirty-two, and phosphorus thirty-one. In the example CO there are twelve parts of carbon and sixteen of oxygen, one part by weight of each, hence it is called a monoxid, and in CO_2 there are two by weight of oxygen to the one of carbon, hence it is called a dioxid. Every particle is arranged in connection with other particles. Now, the property of heat is to expand these particles, which it does by pushing them away from each other. In a liquid the particles have been pushed so far apart that they cannot retain their position when removed from the vessel, they have so little attraction for each other. A cubic inch of water makes a cubic foot of steam. The particles in steam are so far apart that they have lost all attraction for each other, though each particle is as solid as ever and does not change. The particles of air always seek an equilibrium and the cold air being heavier than the warm falls to the earth, and in so doing pushes the warm air up.

Our systems must get rid of all effete particles of waste. Our lungs always give out carbon dioxide and watery vapor. Our temperature, in a normal state, varies from ninety-eight to one hundred. To continue in this condition the air must be freed from carbon dioxide and a new supply of oxygen given us, but the way most buildings are constructed this is a difficult task, because the carbon dioxide being warm is lighter than the other part of the air, rises and in coming in contact with the cold walls or windows becomes chilled, and unless there is a force supplied to push it out of the window or up a shaft, it will fall and mingle with the air for us to take again into our lungs.

Carbon dioxid when really cold is heavier than air, and if it were pure, or nearly so, it would not support life. A person after having been overcome by carbon dioxide can be brought back to life; indeed, the case would be very much like drowning.

Carbon monoxid, however, works more slowly, and when a person has taken in such a quantity of it as to be overcome by it he cannot be restored to health, because carbon monoxide is a poison and kills. No remedy is known that can remove it from the system. Carbon monoxide has nearly the same weight as air.

The most perfect ventilation in a building is where one building is built within another. Houses now should be built with a forced draught, either supplied by a fan or ventilators extending above the roof.

In an old-style house a pane of glass could be replaced by a nickel or brass gauze and so improve the air in a room without the air blowing upon any one.

We still have a few questions to answer each day. This is the list since I last wrote you:

For cooking green vegetables would you use hard or soft water? For dry vegetables? For green vegetables use hard water, and for dry vegetables use soft water.

If hard water was not at hand, how would you proceed to make it—and soft? To make water hard add

salt in the proportion of one teaspoonful to every gallon of water. To make water soft add one-half teaspoonful of bicarbonate of soda to each gallon of water.

For cooking meats would you use hard or soft water? Soft water.

Can meat always be cooked in water? Yes, but it is not always palatable.

Is the temperature of boiling water always the same? If not, why? No, because difference in altitude affects the temperature.

What occurs in boiling? Water in boiling parts with the air which is found to be diffused through all natural waters. The air leaves the water in the bursting of the bubbles.

Of what do these bubbles consist? Vaporized water or steam.

Where are the bubbles formed? Over the hottest part of the vessel.

Do they rise to the top of the water? Not at first.

What becomes of them? They are crushed and disappear in the water.

What happens after the heat continues long enough for these bubbles to rise to the surface and escape into the air? The escaping of the bubbles into the air causes the agitation of the liquid called boiling or ebullition.

What influence has the air pressure upon boiling? Why? Difference in the pressure of the air makes a difference in the temperature at which water boils, because, when the pressure is partially removed, as in ascending a high mountain, the water finds less resistance to rising into vapor, so it boils at a lower temperature.

Does the weight of the liquid itself affect its boiling? Yes.

Does salt water boil at a higher or lower temperature? Salt water requires a higher temperature to bring it to boiling point because it is heavier than clear water.

Is water boiling violently hotter than water which boils moderately? No.

Does water boil if dropped on a highly heated metallic surface? Why? Give an example. Water in contact with highly heated metallic surfaces does not boil or vaporize. The reason why a globule darts about on a hot stove and does not evaporate is, that a stratum of steam is formed under it, which props it up, so that it is not really in contact with the iron; and steam, being a non-conductor, cuts off the heat. Water enters upon the spheroidal state between 288° and 340° of the hot surface; but when the temperature falls the steam no longer sustains the drop: it is brought in contact with the iron and is at once exploded into vapor. This principle is used in testing flatirons in laundry work.

Does milk or water boil (bubble) in a double boiler? Youman says it can attain the boiling point. The inner vessel must be very thin or it cannot transmit heat enough to reach that point unless the water in the outer vessel is made dense by the addition of salt. As double boilers are usually made and used, neither milk nor water boils in them.

What is the difference between boiling and baking? Boiling is cooking in moist heat, the article being surrounded by water, which softens certain parts and extracts others. Baking is cooking the outer portion by dry heat while the inner portion is cooked by moist heat.

Are things more wholesome boiled or baked? Boiled, because boiling softens the texture.

How is starch affected by boiling? Boiling causes the starch grains to swell to many times their original size and burst the membrane which encloses them. The starch then forms a gelatinous paste which appears clear.

What would you do with tough meat? Boil or stew it, if a large piece. If steak, brush it over with oil and vinegar in the proportion of two of oil to one of vinegar and let it stand some time before cooking it.

Give the chemical composition of meat. Water, albumin, fibrin, gelatin, salts, fats and osmazone.

How is it affected by boiling? The fibrin is hardened, the albumin is coagulated, the gelatin is dissolved, most of the mineral matter is drawn out and falls to the bottom of the vessel, part of the fat is melted and some of it changed to fatty acid. Osmazone is part of the mineral matter and is that which gives odor and flavor to meats and gravies.

What is the difference between boiling and simmering? Water in boiling reaches the temperature of 212° while in simmering it only reaches 180°.

Can meat be thoroughly cooked at a temperature below the boiling-point? Yes.

Give the proper method for cooking meat in water. Pour boiling water over the meat and stand it where it will simmer forty-five minutes for each pound. Add the salt when the meat is half done.

What is the simmering point. One hundred and eighty degrees.

What is the difference between baking and roasting? Baking is done in an enclosed air while roasting is done in a current of air.

Give the best method of baking meat. Place the meat in a baking pan, dredge lightly with pepper. Add one teaspoonful of salt to one cupful of boiling water and pour it into the pan. Place in an oven heated to about 400° and baste every ten minutes, baking it fifteen minutes to the pound.

Describe the oven dampers and their proper positions while baking. The oven dampers are closed because the heat should go around the oven before ascending the chimney.

Which is more highly flavored, roasted or baked meat? Why? Roasted meat, because the oxygen of the air imparts an additional flavor.

With what should meat be basted? Its own fat.

To Broil Steak.—In preparing to broil steak on a range see that the direct draft is open and that the

fire is clear and free from gas. Put a good meat plate on the warming shelf and also a granite plate. Having greased the broiler, put it to heat. Free the steak from suet and place it in the warm broiler and put the broiler over the fire. Count twenty and turn the other side to the fire, and continue to count and turn. It will take eight minutes to broil a thick steak if wished well done, or five minutes if rare. When done, turn the top of the broiler back underneath the lower side. Place the granite plate over the meat and turn the broiler, steak and plate over at the same time. In this way the steak will be placed on the plate without losing any of the juices. Season with salt and pepper; turn the steak and season the other side. Place the steak now exactly where wanted on the good meat plate and serve at once.

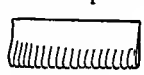
Veal Cutlets.—In preparing veal cutlets we first covered them with boiling water, and after letting them stand about a minute we took them out of the water and wiped them dry. We cut them into pieces about two inches square. We broke an egg in a soup plate and added one tablespoonful of hot water to it. The water keeps the egg from becoming too light while thoroughly mixing the white with the yolk by beating, and it also makes the crust more tender. After placing the veal in the egg we, with a spoon, poured the egg over every part not already covered by the egg. We carefully drained the veal and laid it on a bed of grated bread crumbs and piled crumbs all over it. After pressing the crumbs down hard, we took up the veal, shook it lightly and placed it on a granite plate. We put two tablespoonfuls of drippings into a frying pan, and when it was hot we put in the breaded veal cutlets; when one side was a nice brown we turned it over, and when that side was browned it was ready to be dished and served with tomato sauce.

Tomato Sauce.—For the tomato sauce we put a pint of stewed tomatoes into a small stewpan and added one onion cut in slices, one bay leaf, a blade of mace,

and a sprig of parsley, and let it simmer for ten minutes. We melted one ounce of butter in another saucepan and mixed with it one rounding tablespoonful of flour. We mixed the butter and flour together until smooth. We pressed the tomatoes through a sieve and added them to the butter and flour, stirring continuously until it boiled. We then added salt and pepper to taste, and it was ready to serve.

Beef Stew with Dumplings.—In making a stew from beef we used two pounds of lean beef, which we cut into pieces about one inch square and dredged it thickly with flour. Having put two tablespoonfuls of butter or drippings into a frying pan over a good fire, as soon as it was very hot we added the meat. We kept turning the meat, and as soon as it was nicely browned we turned it into a saucepan. We added one tablespoonful of flour to the butter remaining in the frying pan, and when well mixed we added one quart of boiling water. We stirred until it boiled; then we poured it through a sieve into the saucepan containing the meat. We added one sprig of parsley and a small onion, and having placed a lid on the saucepan, we let its contents simmer for two hours. When the meat had cooked one hour we added one teaspoonful of salt and three dashes of pepper. In making the dumplings we sifted one pint of flour and added to it one heaping teaspoonful of baking powder and sifted it again. We added one-fourth of a teaspoonful of salt and about one-fourth of a pint of sweet milk, only enough to make a soft dough. We stirred the dough with a wooden spoon and dipped the dough by small spoonfuls, placing it over the meat. We covered the saucepan and left it to simmer for about twenty minutes. We were very careful *not* to uncover the pan while the dumplings were cooking, for fear they would fall; and as there is danger of the stew scorching after the dumplings are added, we moved the pan to a moderate part of the fire. As soon as the dumplings were done they were served with the meat on a warmed platter.

Boiled Leg of Mutton.—First we wiped the mutton with a dampened towel, and then dredged it thickly with flour and wrapped it carefully with a piece of cheese cloth. We placed the leg of mutton in a kettle and covered it with boiling water, and after it had boiled five minutes we placed it where it would simmer gently fifteen minutes for each pound. When the mutton was half done we added a teaspoonful of salt. We carefully removed the cloth when the mutton was done, and trimmed the bone with a quill and garnished the dish with parsley. You can make the quill or buy it. We made the one used. Take half a sheet of note or letter paper and fold it through the middle lengthwise. Cut across the fold half way through the paper. It will look something like a fringe. Unfold the paper and fold the other side out, and the cut part will puff out. Wind the smooth, uncut part around the bone and the cut part will stand out like a flower and conceal the end of the bone. The liquid in which the mutton was boiled can be used for stock.



Caper Sauce.—We made caper sauce to serve with the leg of mutton, and the way in which we did it was to melt two ounces of butter in a saucepan and mix with it two rounding tablespoonfuls of flour. When mixed smooth we added one pint of boiling water, stirring all the time. We took it from the fire after it had boiled a minute and added a half teaspoonful of salt, and a dash of white pepper, and two tablespoonfuls of capers. We poured it into a boat and it was ready to be served.

Pressed Meat.—We ground one quart of pieces of cold cooked meat in a Perfection cutter, and then added to the meat one teaspoonful of cinnamon, one teaspoonful of allspice, one-half teaspoonful of cloves, one-fourth teaspoonful of mace, one-half teaspoonful of salt, and one-fourth teaspoonful of black pepper. All the spices were in powdered form. Having dissolved one tablespoonful of gelatin in a fourth of a

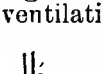
cup of cold water, we added to it one-half pint of boiling stock and mixed all the ingredients together and pressed it into a square mould. We stood the mould in a cold place to cool. When wanted for use we turned it from the mould and cut it in slices. It looked very appetizing garnished with parsley or cress.

Your affectionate cousin,
VIRGINIA REED.

LETTER IV.

November 16, 189–.

My Dear Cousin Alethea: Our last lecture was a continuation of the one on Ventilation. The professor explained the workings of an S sewer pipe, showing that the way in which they are often used the water held in the bend is very little protection against the admission of sewer air into our dwellings, because the water in rushing through the pipe often leaves so small an amount of water in the seal or bend that the air from the sewer can easily force its way through it, and if the pipes were allowed to stand for a few weeks in that condition the water would evaporate so there would be nothing to hinder the sewer air from entering the room. Indeed all S sewer pipes should have a ventilating tube connected with a chimney. A better plan still is to have the tubing arranged with a ball that would act as a valve and close the tube whenever the air would try to force its way up the tube.



In correct plumbing there should be an overflow pipe to carry the extra water from the reservoir to the roof or down to the sink, in either case warning you of the quantity of water held. Under *no* consideration should the overflow pipe be allowed to connect with the ventilator of the sewer, or with the sewer pipe itself, for in either case the water would become polluted.

People seem to be too much afraid of sewer air. There really is no such thing as sewer gas. Sewer air consists of carbon dioxid and common air, with a little less oxygen and a small amount of gas arising from decomposing substances, which gives it its disagreeable

odor. Illuminating gas often creeps into the sewer and increases the disagreeableness of the odor. It is the igniting of the illuminating gas which causes the explosions we read about and which are always attributed to sewer gas.

Of course sewer air is *not* wholesome, but it is probbable that it does not carry a large amount of germs. It, however, sickens and weakens those who inhale it and in that way makes them less able to resist disease when exposed to it. It is probable that ventilated sewers do not have air so contaminated with bacteria as the air in our living rooms. The air about the storm openings of sewers may contain more germs in it than the other.

Emanations from lamps and persons, as usually mingled with good air, are not causes of harm unless one of the persons is diseased.

In consumption the coughing does not hurt the air for others unless the expectoration contains lung particles, which must dry and be inhaled by others before they could be injured by it. Air that has been exhaled, though not wholesome, does not convey actual disease germs. Cats and dogs may be more likely to be the conveyers of disease germs than the air we breathe.

We have had a few more new questions.

Give the proper method of roasting and broiling meats, and the difference. Broiling is the term applied to cooking a thin piece with one side to the fire and the other in a current of air. Roasting is the term applied to cooking a large thick piece of meat before an open fire, with the fire on one side and a current of air on the other. In either case the meat is turned from time to time. Sometimes, however, roasting is applied to meat that is baked or cooked in an oven with a ganze door. Fish, birds and chickens are broiled with the bone side next to the fire, and are not turned until done, when the skin side is turned to the fire long enough for the skin to brown nicely. It takes from one half to three-quarters of an hour for a

chicken to broil. Roasting requires from fifteen to twenty minutes to the pound, while white meats require nearly thirty minutes to the pound.

Give the proper method of roasting and baking poultry and game. After drawing and trussing the fowl, place it in a baking pan and add half a cup of water and a teaspoonful of salt. If you did not lard the fowl place two thin slices of bacon on its breast and place it in the oven, basting it every ten minutes, first with butter and then with its own drippings. Dark meat requires a quick oven and white meat a slow oven. Young and white meats require to be well cooked.

What is the proper temperature for roasting or baking? Four hundred degrees Fahrenheit to start on, and then lowered to about two hundred and sixty.

Should the temperature be stationary throughout the entire cooking; if so, why? No; it should not be the same, because if continued at 400° the outside would be charred before the center would have time to be sufficiently cooked.

What is braising? Describe the proper method. Braising is cooking meat in a closed vessel, the meat being placed on or over a bed of vegetables.

What kinds of meats are better braised? Inferior or tough portions.

What is frying? Frying is cooking by immersion in heated oil.

What is the proper temperature for frying? When the oil gives off a vapor not a smoke, test by a piece of bread; if it browns quickly it is right. It should be from 300° to 320° for doughnuts, crullers and fritters, and about 385° for fish, potatoes, croquettes and rissoles.

Are fried articles wholesome? Why not? The inside is wholesome but the outside is not, because the fat in being heated so hot partly decomposes, forming an irritating acid.

What material is best and most wholesome for frying purposes? A vegetable oil, the oil from the olive being the best of all.

Which heats more quickly, vegetable or animal oil? Vegetable oil, after we have excepted butter. Butter heats most quickly of all known fats.

Give the method for frying in vegetable oil. In animal oil. The method is the same. See that the oil is at the proper temperature. Place the article to be fried in a frying basket and place the basket on a granite plate to carry or hold. Place the basket and contents in the heated oil and let it remain there until the article is the desired shade of brown. Lift the basket out and place it on the granite plate, and then remove the article, placing it on a brown paper on another plate.

Do you fry in boiling fat? No; fat boils at a temperature of 500°.

What do fats contain when bubbles appear on the surface during the heating process? Water.

What causes the spattering and boiling as articles are immersed? Moisture in the articles themselves.

Must we have separate supplies of fat to fry fish, croquettes, etc.? No. Fat does not absorb the odor from an article being fried unless the fat was not hot enough when the article was put in it, then the article would absorb some of the fat and the remainder of the fat would absorb odor from the article being fried.

What utensils are necessary for frying? A deep vessel to contain the oil to be heated, a wire basket or fork to lift out articles, a granite plate to put under them, and a paper on another plate upon which to place the articles when removed from the basket or fork.

What is cooking in a small quantity of fat called? Sautéing.

Which is more palatable or wholesome, this or frying? Frying is more wholesome but not always more palatable.

How do you clarify fat? Place the pieces of fat in a granite saucepan and keep it over a moderate fire until the fat is all melted, then pour it through a sieve into a clean pan and add a pint of boiling water to

i three pounds of fat, and also add one-fourth of a poonful of baking soda. Boil until the fat is clear the water has evaporated. Skim and strain, and ready for use.

/hat precautions should be taken while frying in Not to spill or splash the fat upon the stove and have the fat deep enough to cover the article well. a small quantity of fat is spilled and takes fire, t is the best way of removing it? Smother the with salt, ashes or flour, then lift it off with a e or shovel.

/hat sort of fat is best for frying doughnuts and ers? Why? Vegetable oil to which some mut- suet has been added. The animal oil heats and s more slowly than the vegetable oil, therefore it ld form a crust more quickly and allow less oil to bsorbed by the dough.

/hat is the most economical way of cooking meat? ling.

y which process is the greatest loss in weight? y? By roasting. In roasting, the meat loses a of its natural water by evaporation, and a part of at by melting.

low great is that loss? One pound and five ounces four-pound roast of beef, and one pound six ounces four-pound roast of mutton. The same amount eef would lose one pound and three ounces by ing or one pound by boiling, while the same unt of mutton would lose one pound and four ces by baking or fourteen ounces by boiling.

dare say you are familiar with many of these pes, but if I should leave out some, thinking you w them, I might happen to leave out the very ones would like to know about, so I shall write out ry one.

UICK BISCUITS.—In making biscuits we measured quart of flour that had been sifted and added to it rounding teaspoonfuls of baking powder and ed them together with one level teaspoonful of

salt. We then rubbed in one ounce of butter. Having seen that the oven was hot enough (at about 400° Fahr.) we brushed the pan with oil and then added a half pint of milk to the flour and kneaded it up quickly. We rolled the dough an inch in thickness, and with a cutter about the size of a silver half dollar we cut them out and put them in the pan and the pan in the oven. Always work as rapidly as possible when using baking powder so as not to lose any of its good effects. We could have used one level teaspoonful of cream of tartar and one-half teaspoonful of soda if we had wished. In either case sweet milk must be used. We baked the biscuits twenty minutes.

To Corn Beef.—In corning beef we heated a panful of salt, and having wiped the meat carefully we rubbed in all the hot salt we could, and when it would imbibe no more we placed the meat in a deep crock or jar and took it down cellar where it would keep cool. We turned the meat over every day for a week. This rule is for corning a small quantity, such as would be used soon.

Breakfast Bacon.—In preparing breakfast bacon we cut the bacon almost as thin as possible and put the slices in a frying pan that had not been heated, so that the bacon might heat gradually. We fried it until brown and crisp. It should be served as a garnish to a dish of fried potatoes.

Plain Hash.—In making plain hash we run one pint of pieces of cold cooked meat through the Perfection cutter. We blanched the kernels of eight almonds by pouring boiling water on them and letting them stand until the skin slipped off easily, and then we chopped them very fine. We placed two ounces of butter in a frying pan and sliced into it one-half of a small onion and fried it a nice brown. We then added two ounces of bread and one cup of milk. We took it from the fire, and when it had stood ten minutes we added the almonds, meat, one teaspoonful of curry powder, one teaspoonful of salt, and the beaten yolks

of three eggs, and mixed all well together in the frying pan on the stove. After it was well heated through, it was served garnished with triangles of toasted bread.

Browned Flour. We browned some flour so we could have it to use in gravies or sauces. We put the sifted flour in a baking pan and placed the pan in the oven. We stirred the flour occasionally with a wooden spoon and took it out while it was a golden brown; that is, before it was as dark as cinnamon brown. We had stirred it often enough to keep it an even color.

Corn Gems.—In making corn gems we put two cupfuls of yellow corn meal in a mixing bowl, and in the center we placed two ounces of butter, and over both we poured one cup of boiling milk. We stirred it well and then added one cup of cold milk and one-fourth of a teaspoonful of salt, three eggs well beaten, and one cup of flour. After mixing well we sifted over all two rounding teaspoonfuls of baking powder, beat the mixture thoroughly, and then poured it into well-oiled gem pans, and put them at once into the oven, which was hot. They were allowed to bake about thirty minutes.

Yeast Bread.—In making bread we began as soon as school opened, by putting a pint of milk on to scald. When scalded we poured the milk into a mixing bowl and added one teaspoonful of salt. Salt is always measured by the *level* spoonful. We also added one rounding teaspoonful of butter and two teaspoonfuls of sugar. When the milk was lukewarm we added two cakes of compressed yeast, which we had dissolved in one-fourth of a cup of lukewarm water, and added flour enough to make a thick batter. We beat the batter till it was full of air bubbles. We filled the breadraiser one-third full of water as warm as we could keep our hands in, and then put the bowl of sponge in it, and put the cover on, and placed it where it would not cool quickly. The warmth and moisture makes the yeast grow, but if the water were too warm it would kill the yeast. If you do not have a bread raiser you

can put the water in the dishpan and use the bread-board for a cover, if you have not a lid large enough. When the sponge had doubled its bulk we added flour enough to make a dough, and when stiff enough to take out on the breadboard we kneaded it quickly and gently until the dough would not stick to the board or our hands. It had become smooth and elastic, and seemed to form blisters on its surface as we kneaded it. We put it back into the bowl and the bowl into the bread raiser. When it had again doubled its bulk we turned it out on the breadboard and divided it into loaves, and without adding any flour we gently moulded them into shape, put them into well-greased pans and placed them where they would keep warm until light. We baked small single loaves three-quarters of an hour. The bread should be in the oven ten minutes before it begins to brown. The oven was at about 360° when we put the bread in. When baked the whole outside of the loaf was brown. We at once removed it from the pan and stood it across the top of the pan, where the air could circulate around it. When cold, the bread was kept in a tin box without a wrapping of any kind. We had the bread baked in less than four hours from the time we started it. If you cannot get Fleischman's compressed yeast, use one-half cup of home-made jug yeast. Less yeast would have required more time.

MASHED POTATOES.—In preparing potatoes to mash we peeled six good-sized potatoes and left them in cold water for one hour. We then put them into a kettle of soft boiling water and placed the kettle where they would boil slowly. As soon as soft enough to admit a fork we poured the water off and dredged them with salt and shook them so that all would be exposed to the cold air. If we had wished to serve them boiled we would have covered them with a napkin and let them stand on the back part of the stove for five minutes, when they would have been ready, but as we wanted them mashed, we mashed them with a wire masher or fork until free from

lumps; then we added a piece of butter the size of a walnut, one-fourth of a cup of boiling cream, a dash of pepper, and if in dredging with salt we did not use a whole teaspoonful, we added the remainder of it and beat all of it with a fork until very light. They were served on a heated dish uncovered.

Boiled Onions.—In preparing onions for boiling we selected one dozen as near the same size as possible, and put them into cold water until we had removed the skins, then we dropped them into a saucepan of boiling water and added one teaspoonful of salt. Never forget to add the salt or the onions will be insipid. It takes about forty minutes for them to become tender. Of course it depends somewhat on the size of the onions. When we could pierce them easily with a fork, we drained them carefully, placed them on a heated dish, and poured cream sauce over them.

Cream Sauce.—In making cream sauce we put one ounce of butter in a saucepan, and when it had melted we added one rounding tablespoonful of flour and mixed it smooth, then added one-half pint of milk, stirring all the time until it boiled. We then added one-half teaspoonful of salt, mixed with one fourth of a teaspoonful of pepper, and it was ready to be served. Cream sauce is always made in this proportion, and in taking half of a spoonful of anything we always divide it lengthwise of the spoon.

Soft Gingerbread.—In making soft gingerbread we beat the yolks of two eggs with four ounces of butter and then added one-half cup of milk. We put one teaspoonful of soda in one and one-half cups of New Orleans molasses and stirred it well, then poured it into the mixing bowl with the other ingredients and added one tablespoonful of ginger, and little by little we added three cups of flour, stirring it all thoroughly. We beat the whites of the two eggs to a stiff froth and added them carefully, and, having brushed a granite baking pan with oil, we poured in the ginger

batter. We baked it three-quarters of an hour in a moderate oven.

STUFFED POTATOES.—In preparing potatoes for stuffing we first washed and brushed the potatoes with a small brush and then baked them in a quick oven for about thirty minutes, until they were soft when pinched. We took them out and with a sharp knife cut them through the middle lengthwise. We scooped them out with a spoon into a heated bowl, and after mashing them fine we added one ounce of butter, one-fourth of a cup of hot milk, one teaspoonful of salt, and about one-eighth of a teaspoonful of pepper. After beating the potatoes until very light, we stirred in very gently the well-beaten whites of two eggs and filled the skins with the mixture. We brushed the top with the yolk of the eggs and then browned them in the oven. For this dish we used six good-sized potatoes.

CORNED BEEF HASH.—In boiling beef that had been corned we first washed it well and then put it on in cold water, bringing it slowly to the simmering point. We allowed it to simmer thirty minutes to the pound. Had we wished to serve it hot with vegetables, we would have allowed one hour and a half for cabbage to cook, one hour for turnips, and twenty minutes for potatoes. We, however, wanted it for hash, so we allowed it to cool in the liquor in which it had boiled. When cold we put a pint of pieces through the meat chopper and mixed a pint of cold boiled potatoes, which had been chopped fine, with it, and turned them into a frying pan and added one cup of stock (water could have been used), and then added one ounce of butter, one teaspoonful of onion juice and three dashes of pepper. We stirred continuously until it boiled. It was served on buttered toast.

In all of our cooking we use a wooden spoon or spatula for stirring.

STEWED TURNIPS.—In preparing turnips for stewing we scrubbed and pared six small turnips, cut them into dice, and then put them into a saucepan of boil-

ing water. We let them boil thirty minutes, and when they were almost done we made a cream sauce, which we kept warm by standing it over the tea-kettle while we drained the turnips in a colander and then put them in a heated dish. We poured the cream sauce over them and they were ready to be served.

STEWED PRUNES.—In preparing prunes for stewing we washed them through several cold waters and then turned them into a granite or porcelain-lined kettle, and covering them with cold water let them soak until next morning, when we placed the kettle containing the prunes, and the water in which they had soaked, on the stove where they would simmer gently until tender. We sweetened them to taste when we first put them on the stove. When tender we carefully lifted out the prunes and left the syrup to boil rapidly for ten minutes. We poured the syrup over the prunes and stood them away to cool.

We stew dried peaches in the same way.

Your affectionate cousin,

VIRGINIA REED.

LETTER V.

November 20, 189–.

My Dear Cousin Alethea: Upon the walls of our schoolroom hang four charts which we have been having to study. They are marked the way in which the butchers here cut up these animals. We have had to learn the name and location of all the different pieces, and also to tell the best way of preparing or using the different pieces. You will find by studying the outlines I enclose that it was no easy task.

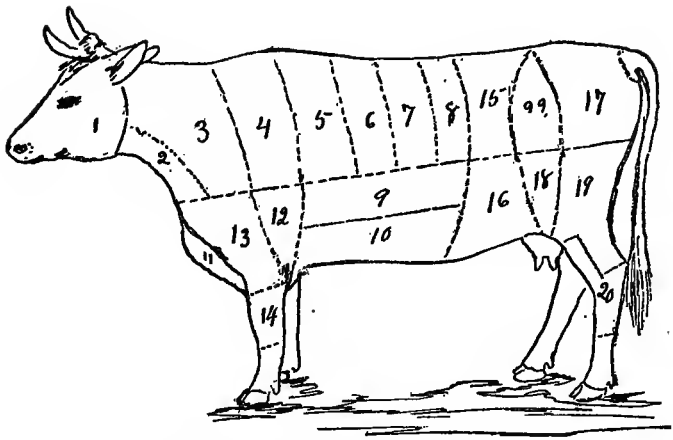
Our questions have also been on the same subjects, as you will perceive.

What is beef? Mutton? Veal? Pork? Beef is the flesh of animals of the genus *Bos.* Mutton is the flesh of the sheep, a small ruminant quadruped of the genus *Ovis.* Veal is the flesh of young animals of the genus *Bos.* Pork is the flesh of the hog, a domesticated animal of the genus *Sus.*

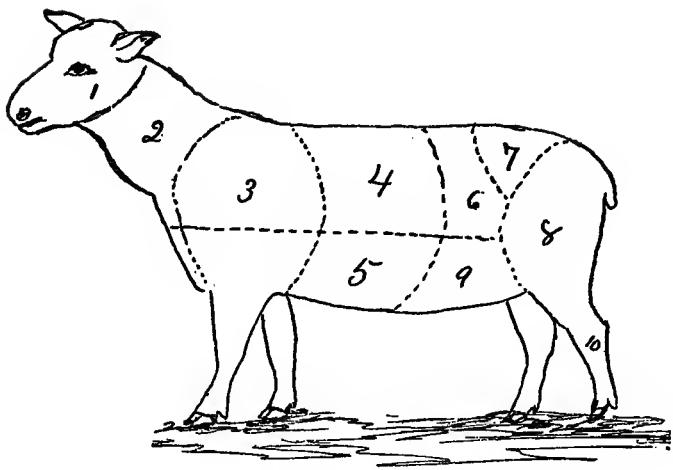
Tell how beef is divided. Beef is divided into fore and hind quarters. The fore quarter is divided into ribs, shoulder, bolar, plate, brisket, shin, neck and sticking piece. The hind quarter is divided into leg, loin, flank, pin bone, rump, round and veiny piece.

What constitutes good beef? The meat should be fine grained, in color a clear red, with a yellowish-white firm fat.

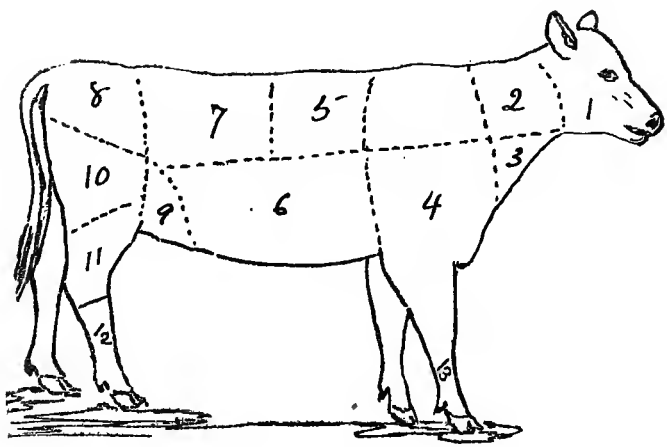
What pieces are best for roasting or baking? Broiling? Stewing? Frying? Pin bone, ribs and sirloin are the best for roasting. For broiling the fillet, sirloin and rump steaks are best. Shoulder, round, brisket, neck and all inferior pieces are best stewed. For frying, which here means sautéing, any of the steaks may be used.



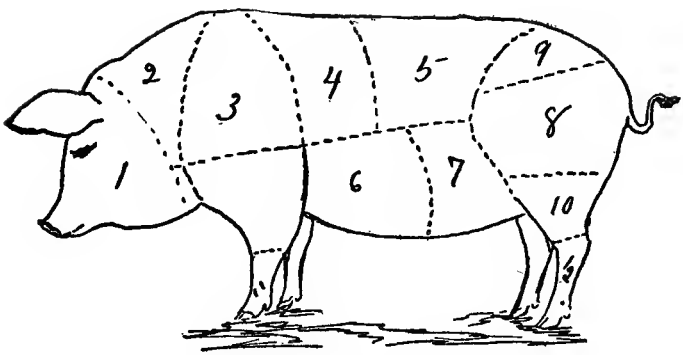
1. Head used for mincemeat.
2. Sticking piece used in mincemeat, stews or for tea.
3. Neck used for stews.
4. Second and third chuck used for baking or roasting.
5. First chuck used for second quality of steaks and roasts.
6. First cut standing ribs used for roasting.
7. Middle cut of standing ribs used for roasting.
8. Back ribs used for roasting.
9. Plate used for stews or corning.
10. Brisket used for stews, pot roast or corning.
11. Butt end of brisket used for corning.
12. Bolar used for pot roast, stews, mincemeat and hashes.
13. Bony end of shoulder used for stock, mincemeat and sausages.
14. Shin used for soups and stewing.
15. Loin used for roasting, boiling.
16. Flank skirt used for stews, braising.
17. Rump used for boiling, steaks.
18. Veiny piece used for corning and drying.
19. Round prime boiling piece though also used for steak, pot roast and stews and beef tea.
20. Leg used for soup and stewing.
21. Tail used for soup.
22. Pin bone, prime roast.



1. Head used for haggis.
2. Neck used in broth and stews.
3. Shoulder used for boiling or roasting.
4. Rack used for French chops for broiling.
5. Breast used for stews and roasting with stuffing.
6. Loin, best end used for roasts and chops.
7. Loin, bone end used for roasts and chops.
8. Leg used for roasts or boiling.
9. Flank used for stews.
10. Feet sometimes called trotters.



1. Head. Head with skin on used in mock-turtle soup.
2. Neck used in stews.
3. Sticking-piece end of breast used in stews and potpies.
4. Shoulder used for roasts.
5. Rack used for cutlets or choice stews.
6. Breast used for roasting and stuffing.
7. Loin, best end used in roasts or as broiled in chops.
8. Loin, bone used for chops and roasts.
9. Flank used in stews.
10. Cutlets and fillet good in a roast or broiled.
11. Knuckle used for soup or stews.
12, 13. Feet used for jelly.



1. Head used in head cheese.
2. Neck used for mince-meat, stews or sausage.
3. Shoulder used for roasts and smoked for broiling.
4. Loin, rib-end used for roasting or chops.
5. Loin, best end used for roasts, chops or baked dishes
6. Breast used for pickling in salt and smoked bacon.
7. Flank used for larding or bacon.
8. Ham used for boiling or panning.
9. Ham, butt end.
10. Ham, hock end.

11, 12. Feet used for souse and jelly.

4, 5, 6 and 7 form together a flitch of bacon.

Trimmings of fat are made into lard while those of lean are made into sausage.

What piece would you select for mince-meat? Soup? Beef tea? For mince-meat use sticking piece. For soup use shin and leg. For beef tea use sticking piece or under part of the round.

Tell how mutton and lamb are divided. Head, neck, shoulder, rack, breast, loin best end, loin bone end, leg, flank, and feet or trotters. The two pieces left together of the bone end of the loin make the saddle.

What constitutes good mutton or lamb? The flesh should be a bright red color, the fat firm and white.

What pieces are best for roasting or baking? Broiling? Stewing? Frying? For roasting use the leg, shoulder, and loin or saddle. For broiling use loin or rack and ribs or French chops. For stewing use the breast, neck, and flank. We do not *fry* any part, but we sauté loin chops.

What piece would you use for mutton broth? The neck.

Tell how veal is divided and what constitutes good veal. Veal is divided into fore and hind quarters. The fore quarter is divided into loin, breast, shoulder and neck. The hind quarter is divided into leg and loin. The flesh should be firm and pinkish-tinged and the bones hard.

What pieces are best for roasting or baking? Stewing? Frying? Loin, shoulder, fillet, and breast are best for roasting. Knuckle and neck are best for stewing. Chops cut from the loin and cutlets cut from the leg are best for frying—sautéing we should say, to be exact.

Tell how pork is divided and what constitutes good pork. Pork is divided into leg, loin, chine, spareribs, middlings, head and feet. The lean meat must be fine-grained and of a pale-red color, the fat white, and the skin smooth and clear.

What pieces are best for roasting or baking? Frying? Loin, leg and chine are best for roasting. The shoulder, ham and flitch are best for panning. We do not fry or sauté any of it.

What parts would be used for sausage? Lard? Bacon? Larding pork? Flitch? Scrapple or puddings? For sausage use all scraps of lean. For lard use the fat from around the kidney and trimmings of fat taken from any of the other parts. Bacon is made from the loin, breast and flank. Larding pork is taken from the flank. Flitch is the whole side of bacon—the loin, breast and flank. Scrapple or pudding is made from the head, heart, liver and feet, chopped fine and thickened with corn meal.

What is souse? Souse is meat steeped in pickle. It is usually made from the feet of pigs.

What internal organs of animals are used for food? Heart, liver, kidneys, sweatbreads, or thymus gland, and pancreas, brains and stomach.

Describe each and tell from what part of the animal it is taken. The heart is a modified ovoid in form and is located between the shoulders. The liver is lobed-shaped, and is in hind quarters near the kidneys. The kidneys are nearly elliptical in form and are located in the loins just back of the ribs. The thymus gland is a long, narrow gland lying parallel with the windpipe. The pancreas is a gland nearly square in form and is located near the thymus gland and heart. The brains are in the upper part of the head. The stomach is in the hind quarters near the liver.

Give the proper methods of cooking each. The heart can be baked, stewed, or spiced. The liver can be braised, broiled or stewed. The kidneys can be sautéd or stewed. The sweetbreads can be baked, made into croquettes, or broiled. Brains are fried. The prepared stomach or tripe can be stewed, broiled, fried or soused. Liver and kidneys are not considered wholesome.

What is tripe? What is said of its digestibility? Tripe is the first of the four stomachs of ruminating animals. It is easily digested and very nutritious.

Which is more easily digested, beef or mutton? Why? Mutton, because its texture is not so compact as in beef, and there is less fat among its fibers.

Which is the more nutritious? Why? Beef, because its fibers are denser and the juices are more stimulating.

What is said of the digestibility of pork and veal? They are difficult to digest.

What is fibrin? Fibrin is that property in animal blood and the juices of plants which spontaneously coagulates when they are kept still a short time. Fibrin is composed of the same elements as albumin, but contains a larger amount of sulphur and phosphates, and a still larger quantity of oxygen.

What is the difference between the juices and blood of meat? The juices of flesh are acid, but the blood is alkali.

What is the difference between suet and fat? Suet is the name given to that part of fat which is found inside the loin around the kidneys, and contains more stearin than is found in the fat taken from other parts of the animal.

What is the thickening principle of soup? Gelatin.

What is gelatin? Gelatin is a nitrogenous principle obtained from bones, ligaments, tendons, skin and membranes of animals, and contains carbon, hydrogen, oxygen, nitrogen, and a small amount of sulphur. It is not nutritive, and when taken in excess clogs the system.

Why does veal or lamb broth coagulate sooner in cooling than that of beef or mutton? On account of the greater quantity of gelatin which they contain.

Would you use hot or cold water in making soup? Why? Cold water, because it draws out all the nourishing properties from the meat.

When should salt be added to meat in cooking? Why? When the meat is half done, because by that time the surface of the meat has had the pores sealed and there is no danger of drawing out the juices or toughening the fiber.

What gives odor and flavor to meats? Osmazome.

To what class of foods do meats belong? All belong to the nitrogenous class, excepting pork, bear and opossum, which belong to the carbonaceous class.

What is said of the digestibility of warmed-over meats? They are not so digestible as freshly cooked meats.

Which is the most wholesome way of serving them? Sliced cold and served with a warm sauce.

Are the heads of animals ever used for food? Yes; the heads of all animals except the deer are used. Sheep's head is considered a delicacy in Scotland.

What is haggis? Haggis is made from the head and internal organs of sheep chopped fine and highly seasoned, then mixed with oatmeal and put in a bladder or maw and boiled.

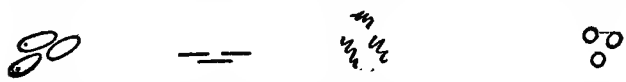
What is corn beef? What is dried beef? Give the best methods of cooking. Corn beef is beef that has been salted and laid in a brine. Dried beef is beef that has been salted, dried in the air and subjected to smoke. Corn beef is best boiled or pressed. Dried beef is best in a fricassee or frizzled.

The professor's last lecture was about microbes and to me was very interesting.

Something has been known about microbes for more than two hundred years, because in 1680 a Dutchman named Leuwenhoeck figured some that developed in the mouth.

Pasteur has done a great deal to increase this knowledge. He pointed out the direct connection in the formation of yeast. Liebig, another great student of this subject, was opposed to the theories of Pasteur and has since been proved to be wrong. Koch is another modern thinker who has added to our knowledge.

It has been usual to divide microbes into four divisions based upon the form, as follows: The



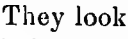
Bacteria, the Bacilli, the Spirilla and the Micrococci. They are considered to belong to the vegetable kingdom, though many will doubtless prove to be on the

border-line between that and the animal kingdom. They seem allied to the fungi and are analagous to the toadstools. They do not form green coloring matter in their own bodies, and the most of them are colorless, therefore when put into aniline dyes they become so stained that you can see them more plainly under the microscope. The French incline to cultivating them in broths, while the Germans use the solid culture media.

Abbé aided the increase of knowledge in this direction especially by the perfecting of the microscope.

The professor explained one of the best ways of cultivating microbes. You form a composition of beef extract, glucose, peptone and gelatin, having it the consistency of jelly. The composition is then sterilized by the fractional process, which is steaming it for twenty minutes on three successive days. When you wish to inoculate this substance with microbes you heat an iron wire red-hot, let it cool a little and lift out the microbe from wherever found and insert it into the above sterilized composition. Seal the vessel with cotton.

Professor showed us some microbes of a red color on potato, that had been so kept for three months. He also showed us several other kinds and that which causes anthrax (the same malignant kind that makes carbuncles) under the microscope. They looked like hair. Most microbes require air to grow and are therefore called aërobic. Some grow away from the air, hence are called anaërobic, while some are so accommodating as to grow either way and are said to be facultative. Symbiosis means joint life, as the microbes on the pea roots.

The microbes increase either by division or by spores.  You can kill the full-grown microbe by heat, but the egg or seed is very tenacious of life, and to kill them you must sterilize by the fractional process. In disinfecting we aim to kill the spores.

Microbes are found in the air, water and soil, and are the cause of all rotting, for by this decomposition they complete the circle of nature.

Milk may contain the germs of consumption, obtained either from the air or the earth, hence it should be Pasteurized at 165° Fahrenheit. Dogs are not susceptible to consumption, but cats and birds are. Cats have diphtheria and various skin diseases.

The microbes of typhoid grow by division, with or without air, and are colorless.

The spirilla of cholera are mostly aërobic and are delicate.

To ascertain whether there are any of the microbes of consumption present, one of the methods is to subject them to dilute nitric acid after they have been stained with aniline dye. The microbe of consumption retains the aniline color while all others lose it. The germ is a bacillus tuberculosis.

Diphtheria looks like or

Now, Cousin Alethea, I will write out a few recipes, as you will doubtless have time to try some before hearing from me again.

Stewed Cranberries.—In preparing cranberries for stewing we looked them over and washed them well. We put one quart of cranberries into a granite kettle and added one pint of water, and having covered the kettle, stewed them ten minutes. We then added one pound of sugar and put the kettle on the back of the stove where they could not boil. After fifteen minutes we turned them into a dish and left them to cool before being served.

Rusks.—In making rusks we scalded one pint of milk in a farina boiler and added two ounces of butter and two eggs well beaten without being separated. When lukewarm we poured it into a large bowl and

added one cup of sugar, one-half teaspoonful of salt and one-half cup of jug yeast, or two cakes of compressed yeast, dissolved in one-fourth cup of lukewarm water, and flour enough to make a thin batter, which we beat continuously for five minutes. We then placed the bowl in the bread raiser filled one-third full of warm water, and having put on the cover left it to grow light, just as we did our bread sponge. When light we added flour enough to make a soft dough and kneaded it lightly on the bread-board for about ten minutes before putting in the bowl and placing the bowl back in the bread raiser to rise again. When light, we pinched off pieces of the dough about as large as a tablespoon rounding full, and formed it into balls, which we placed in a greased granite baking pan and set them where they would keep warm until light. We brushed the tops with milk, when light, and baked them in a quick oven for twenty minutes. We might have brushed the tops with the white of egg, as it also causes the crust to brown nicely.

Grafton Cake.—In making a loaf of Grafton cake we beat the yolks of two eggs, one and one-half cupfuls of sugar and two ounces of butter, until light. We added one cup of water and one and one-half cupfuls of flour, and beat it until smooth; after which we added the well-beaten whites of two eggs and one and one-half cupfuls of flour. When smooth we sifted over all one heaping teaspoonful of baking powder and one-fourth of a nutmeg grated. After mixing all well together we turned the mixture into a pan which was lined with well-oiled paper, and baked it for three-quarters of an hour in a moderate oven. The flour had been well sifted before measuring the three cupfuls.

Your affectionate cousin,

Virginia Reed.

LETTER VI.

November 24, 189–.

My Dear Cousin Alethea: They have been having a Food Exposition here in the city for the past week. We were presented with season tickets by our teacher, and requested to attend every afternoon. This Food Exposition reminds me very much of the second story part of the Agricultural Building at the Columbian Exposition. There are many compartments tastily arranged, each one making a display of some one certain article which they either wish you to taste or take a sample home with you; or, at least, take a picture card on which are set forth the special merits of the article. If a person were to eat each article of food offered one would have a very fair meal.

We of the Cooking School are becoming better acquainted with each other, and are having a very enjoyable time together. We go around the exhibition hall once or twice a week, and attend every afternoon the lecture given on "Food" in the lecture hall. The topic for each lecture is different.

Remembering your fondness for Salads, I took notes on that lecture, which I will now write out.

Turkey Salad in Aspic was the first salad prepared. In making the aspic, cover one tablespoonful of gelatin with one-fourth of a cup of cold water. While the gelatin is dissolving put one slice of onion, one bay leaf, a piece of celery, together with one pint of cold water, in a saucepan and place it on the stove to boil. Add one-fourth of a teaspoonful of pepper, and while boiling add one-fourth of a teaspoonful of beef extract and ten drops of vegetable coloring, which must be stirred in carefully. Add one-half teaspoonful of salt.

Remove from the stove and add the gelatin, most of which has by this time dissolved ; stir gently and then strain the liquid through two thicknesses of cheese-cloth into a mould. Stand it away to cool, but not to become hard or solid. Take the breast of a turkey that has been cooked and cut it into strips, cutting with the grain of the meat. Reject all gristle, fat and skin, and cut the strips into blocks about one-third of an inch square. To each quart of the meat allow two-thirds of a quart of celery cut into pieces the same size as the meat. If the breast of the turkey is cooked expressly for this salad, season it with one teaspoonful of salt and one-fourth of a teaspoonful of pepper. The turkey and the celery must be very cold before being added to the aspic. Put the turkey in the mould while the aspic is yet a little warm, and work the celery over the top. In the very center place the celery, covered with mayonnaise dressing. Stand away to harden. When wanted, turn the jelly out of the mould and garnish the edge of the dish with lettuce leaves.

Mayonnaise Dressing. — In making mayonnaise dressing it is best to have everything very cold. Place the yolks of two uncooked eggs in a soup plate and mix them well for a short time, then add one-fourth of a teaspoonful of salt and stir well with a wooden fork, or if a wooden one is not at hand use a silver one. Add olive oil a drop at a time, stirring all the time. As much as one pint of oil can be added to the yolks of two eggs. If the dressing seems too thick add vinegar, a few drops at a time. Two tablespoonfuls of tarragon vinegar would be the correct amount for one pint of oil. After one-half cup of oil has been added to the egg yolks, alternate the oil with the vinegar. This dressing to be right should not be so stiff as jelly. It is a good plan to have the plate resting on a pan of ice during the making of the dressing.

If the dressing should happen to curdle or separate, commence over with the yolk of one egg, and after it is well started with some oil, add the above mixture a

little at a time until it is all used, then add oil gradually until the amount desired is obtained. A grain of red pepper is added. If the taste of the oil is disagreeable, it can be modified by adding whipped cream in the proportion of one-half pint of whipped cream to one pint of oil. Many persons use lemon juice instead of vinegar in making salad dressings.

SWEDISH SALAD.—In making Swedish salad, quarter four sardines and remove the skin, bone, head and tail. Take two good-sized boiled potatoes, and cut them in slices three-sixteenths of an inch thick, then cut the slices into diamonds or fancy shapes, and also cut one small boiled beet into fancy shapes. Put dark lettuce leaves around the bowl, with lighter leaves within. For the center use one-half cup of cold roast beef, veal, chicken, mutton, duck or sardines; whichever you choose cut into small blocks. The meat and potatoes are mixed together before putting them into the center, and over all sprinkle thirty drops of onion juice. Arrange the quarters of sardines among the lettuce leaves and decorate it all with the pieces of beet. Serve this salad with French dressing and then sprinkle over all one tablespoonful of finely chopped parsley.

FRENCH DRESSING.—The easiest way to make French dressing is to put six tablespoonfuls of olive oil and two tablespoonfuls of vinegar, one-half teaspoonful of salt and one-fourth of a teaspoonful of pepper, into a jar and shake it violently until the contents form an emulsion. Then pour it over the salad.

RUSSIAN SALAD.—In making Russian salad form a bed of lettuce leaves and interline the edge with cress. Chop one boiled carrot, one raw onion and one fresh raw tomato, and place them in the center of the bed. Pour over it a French dressing made as for Swedish salad.

The rule is to serve mayonnaise dressing with chicken and fish, and French dressing with all vegetable salads. Chicken should always be cut, because chopping spoils its flavor.

The best hospitals in the land give now, every day, a vegetable salad with oil dressing. The opium in the lettuce soothes, and the nitre acts on the kidneys. Green vegetables are far better than potatoes for waste.

Rub the bowl and spoon with garlic for all salads in which you do not have onion, as it imparts a zest that nothing else will. All things containing sulphurized oil are healthful.

Beets, turnips and onions can be cut in strips and crisped in cold water for garnishing. Preserved stalks of angelica also form a pretty garnish.

It has been most convenient for our teachers to have Invalid Cookery at school during the time of this Food Exposition, so we have not been given any questions to look up. We, however, have had our lecture from the professor of chemistry, and for fear we did not remember our physiology, they have had a doctor bring charts and give us three lectures, which we will have to write up soon. We have also been making puff paste. One of the exhibitors of flour at this Food Exposition wanted some puff paste for his display, and asked our teachers to have it made in the school, so each one of us has made some.

PUFF PASTE.—The way we did was to scald a large bowl and turn that water out and fill it with cold water. When the bowl was cold we turned that water out and refilled it with ice water, with a few small pieces of ice in it. We washed our hands in hot soapsuds, rinsed them with cold water, and without drying them we took one-half pound of butter and held it beneath the surface of the ice water while we washed and worked it until it was soft and elastic. We then patted it into a thin cake and put it on the ice in the refrigerator. We weighed out one-half pound of pastry flour, which is obtained from the first bolting of winter wheat. We put this flour on a large meat plate and made in the center a well, in which we placed one half teaspoonful of salt, one-half teaspoon-

ful of sugar, one-half of the white of one egg unbeaten, and a lump of the washed butter as large as a small egg. We worked these ingredients together, using the thumb and first two fingers of the right hand, adding a little ice water as we gradually worked in the flour. We used altogether about one-fourth of a pint of ice water.

Having it well worked together we kneaded it as we would bread for five minutes, then divided it into two equal parts and rolled each piece into a sheet. We took the cake of butter we had washed, and after removing all moisture from it with a napkin, we broke the butter into small pieces and put them on one of the sheets. We then dredged it thickly with the pastry flour and placed the other sheet on top. We pounded it lightly with the rolling-pin, and then rolled it from us into one long sheet, being careful afterward *never* to touch it with the fingers. We folded in the sides with a spatula, then folded each end over to the middle, and then folded it together again. We turned the paste around, so the fold went to and from us, and rolled it again from us into a long sheet. We folded the ends into the middle, so they would touch each other, and then folded it through the middle. That really makes four layers of paste while in that position. We placed it on a tin pie dish and stood it on the ice for fifteen minutes or more, when we placed it again with the fold to and from us, and rolled it from us into a long thin strip or sheet. The French say that this quantity of paste should form a strip eighteen inches long. We folded it as before, turned and rolled it, and folded it the same; returning it to the pie tin we put it again on the ice for fifteen minutes. We continued to do this until we had rolled it eight times. We then placed it in the refrigerator until the next day. The best paste is made when the room and all the utensils used are very cold.

Shells for Patties.—The next morning we rolled our puff paste into a sheet about an eighth of an inch in thickness, and with a round cutter we cut out a

number of circles, and then took a cutter two sizes smaller and cut out the centers from two-thirds of the circular pieces. We dipped a small brush into the unbeaten white of an egg and lightly touched a solid circular piece about one-half inch from the edge; we then lifted, with a spatula, one of the rings and placed it on the solid piece. We lightly touched the ring, about midway from each edge, with the white of egg and placed another ring on top. We brushed the top of the second ring with the beaten yolk of egg, being careful to put it *only* on the top and that lightly, because if any should touch the edges it would prevent them from puffing up evenly. As many shells as we wanted we prepared in this way, then brushed with the yolk of egg the circular pieces taken from the center of the rings of a corresponding number to be used as lids. We placed them on a granite pan and cut pieces of stale bread to fit within the rings, using the same cutter, and having the pieces one and one-half inches high, which we placed within the rings and put the pan in the refrigerator for thirty minutes. All night would not hurt them, for they must be thoroughly cold.

When the oven was very hot we put them in and baked them about thirty minutes. We removed the pieces of stale bread, and the paste that was unbaked, and returned them to the oven for the centers to dry.

Lady Locks.—In making lady locks we cut the puff paste into strips about one inch wide. It had been rolled out the same as for patty shells. We carefully wound the strips of paste around the sticks and placed them in a baking pan at least two inches from each other. After they had been thoroughly chilled in the refrigerator we baked them in a quick oven for thirty minutes. When done we removed the sticks, and when cold filled the space with a meringue which we made by beating the whites of two eggs until stiff and dry, then adding carefully three tablespoonfuls of powdered sugar and one-half of a teaspoonful of vanilla sugar.

Vol-au-Vent.—Some of the puff paste was wrapped in a napkin and kept in a cold, dry place for one week, then it was rolled out one inch in thickness. A basin the shape of the plate on which it was to be served was placed on the paste, and with a sharp knife the paste was cut the shape of the basin. The basin was removed and another of the same shape taken, which would leave a one and one-half inch margin of paste around this basin, and with a knife the paste was cut halfway through. This basin was removed and the whole top brushed with a beaten egg. This was to form the shell of a vol-au-vent, which was then placed on a baking pan and put in the refrigerator. From other puff paste a lid was made by cutting a piece the size of the smaller basin and brushing the top of it with the beaten egg. It was placed in the pan with the shell and not baked until the next day, so as to be sure to have it ice cold. After baking, the center was taken out, as in the patties, and returned to the oven to dry. In baking puff paste it is necessary to watch the oven carefully, because the paste scorches quickly, and it really ought to puff up before it browns. It requires thirty-five minutes in a very hot oven to bake a vol-au-vent. Should an oven prove to be too hot for the paste, open the draughts of the stove and place a small vessel of ice water in the oven.

The principal of the school was very much pleased with this vol-au-vent. She said she had never had finer made in the school. The shell was two and three-eighths inches in height and the lid was one and five-sixteenths inch.

To Cream Oysters.—To cream the oysters for the vol au-vent, we took twenty-five oysters drained free from liquor, and having put them in a saucepan, placed it on the back of the stove for them to heat. Having put one pint of milk on in a farina boiler, when it was scalded we added one tablespoonful of flour that had been worked together with one ounce of butter, and stirred until it was free from lumps. We added one teaspoonful of salt and one-half tea-

spoonful of pepper, poured it over the oysters and stirred them until it boiled. We turned them into the vol-au-vent, which should then be served immediately.

If for any reason it were necessary to make puff paste when ice is not at hand, bake the paste at once, because moist air will make it become damp and limp.

Your affectionate cousin,

VIRGINIA REED.

LETTER VII.

November 30, 189–.

My Dear Cousin Alethea: There were three premiums offered for the three best loaves of whole wheat bread to be sent to the Food Exposition on a certain day, and as we had made such bread at school, two of the girls decided to compete for the prizes. One received the first prize, fifteen dollars, and we rejoiced.

Whole Wheat Bread.—The way we made whole wheat bread was to scald one pint of milk by pouring into it one pint of boiling water. We added one teaspoonful of salt and also one of butter. We dissolved one cake of compressed yeast in two tablespoonfuls of lukewarm water, and stirred it into the liquid when the liquid was lukewarm, and added flour sufficient to make up but no more than was actually necessary, as too much flour makes bread hard and dry. We kneaded it until the dough was soft and elastic, and did not stick to the hands or board, and then placed it in a bowl, put the bowl in a bread raiser, and poured warm water in the raiser until the water came up over half the height of the bowl. We put the lid on the bread raiser and let it stand where it would keep warm until the bread was light, about two and one-half hours. We moulded it without adding any flour and placed it in a well-greased square pan, which we placed where it would keep warm for about one hour. It must be light and spongy before baking, and if slightly indented by a finger it should rebound at once when the pressure is removed. We baked it one hour.

In moulding bread it should be handled as little as

possible. In baking bread it should be in the oven ten minutes before browning.

The above quantity of dough might have been moulded into three of the long, narrow loaves such as are baked in opened-ended pans. There would then have been more crust, which is considered the most healthful part of yeast bread, because the heat has killed the yeast in the crust and partly converted the starch into dextrin. Whole wheat bread is much more wholesome than other wheat bread, because it contains more of the gluten and mineral portion of the grain.

We used Bond's gluten-germ whole wheat flour, milled at Fort Wayne, Indiana, in making this bread.

People who are inclined to fermentation, or gas in the intestines, should not eat any kind of yeast bread, because it aggravates their troubles.

I will tell you now how we prepared some food for invalids.

Beef Tea.—In making beef tea we ground very fine one pound of lean beef, taken from the under part of the round, and putting it in a granite kettle poured one pint of cold soft water over it, and stirred it well with a wooden spoon. We let it stand in a cool place for two hours, so the water would have a chance to draw as much of the substance out of the meat as possible. We then placed it on the back part of the stove, so that it could come slowly to the steaming point—150° Fahr. When it had steamed well, we strained it through a colander into another kettle, added the crushed shell and white of one egg, beaten well with two tablespoonfuls of cold water, and placed the kettle on the stove. When the tea had again reached the steaming point—under no consideration should it be allowed to boil, or it will be spoiled—we wrung a piece of cheesecloth out of cold water, placed it double over a clean colander or sieve and carefully and gently strained the tea through. We added one half teaspoonful of salt. If desired, a piece of celery, a bay leaf or a clove could have been added to the meat while soaking.

Beef tea is used because it is a stimulant, and not for its food value, which is so low that we are taught it has not any. When a patient will not take any other stimulant, and yet needs it, or is very low, give the beef tea double strength. The crystallized whites of from three to six eggs can be added to one pint of the tea. The albumin would nourish. In giving beef tea with white of egg in it, warm the tea by standing the cup in hot water. When the patient is very low, give one tablespoonful each hour.

Never give beef tea or egg to a scarlet fever patient. Give nothing that works on the skin or kidneys. They could have starches. Whey would be good.

In pneumonia give beef tea and milk. When ill with or recovering from pneumonia, do not use starches or carbonaceous food, because they are excreted by the lungs and bowels.

Beef Juice.—In preparing beef juice we broiled a piece of beef over a quick fire for a minute, and then cut several deep gashes across the grain of the meat and put it in a lemon squeezer, or a vegetable press would do if a squeezer is not at hand. We pressed the juice into a cup and added a wee pinch of salt. We warmed the juice by standing the cup in hot water. It must be used at once. If the beef is juicy, one gill of juice can be obtained from one pound of meat.

Albumin and Milk.—In preparing albumin and milk we poured one-half pint of milk into a pint fruit jar and added to it the unbeaten white of one egg. We screwed on the top and shook the jar until the milk and egg appeared light and smooth. It was ready then to be used.

Eggnog.—In making eggnog we separated one egg and beat the white to a stiff froth. We then mixed in carefully the slightly beaten yolk of the egg. We let two tablespoonfuls of granulated sugar dissolve in one cup of cold milk and then gradually added the milk to the egg. We poured it into a glass and dusted a little grated nutmeg over the top, and it was then ready to be served, unless the doctor ordered one tablespoonful of brandy to be added.

Eggnog, as it contains the yolk of egg, is heavy, and is not usually given until after convalescence has begun.

Egg Flip is made by preparing the egg as for eggnog, and leaving out the milk altogether add the brandy or wine, which cooks the egg.

Barley Water.—In preparing barley water we put two ounces of pearl barley in a granite saucepan and added one quart of boiling water, which we allowed to boil five minutes. We poured off this water and threw it away, as it was used merely to cleanse the barley. We added two quarts of boiling water to the barley and placed it where it would simmer for about two hours and the water be reduced to one quart. We skimmed it often, and kept it covered the rest of the time until done, when we strained it through a fine sieve. Barley water is added to milk in the proportion of one part of barley water to two parts of milk. It is added to milk to make the milk more easy of digestion. The water being absorbed by the stomach leaves the milk curd in smaller pieces than it would otherwise be in, and therefore in a condition to be more easily acted upon by the digestive fluids.

Egg Soup.—In preparing egg soup we put one-half pint of milk in a double boiler and added one ounce of sago, which we cooked twenty minutes, and then strained. We added to it an equal quantity of beef tea, and while still hot we gradually poured it on the well-beaten yolks of two eggs, stirring while doing so. This makes a very nourishing soup. Farina can be used instead of sago and is nearly as good.

Mulled Wine.—In preparing mulled wine we added one tablespoonful of finely broken stick cinnamon and five whole cloves to one-half pint of boiling water in a granite saucepan. We covered it, let it steep ten minutes and then strained it. We had beaten two eggs without separating them, and added to them two tablespoonfuls of sugar; then we gradually added the spiced water and one gill of hot sweet wine and poured the mixture into a pitcher. We poured the mixture

from one vessel to the other for ten times, and it was then ready to be used.

INDIAN GRUEL.—In preparing Indian gruel we put two tablespoonfuls of the yellow granulated corn meal into one pint of cold water and stirred it around well. We then drained the water off carefully, poured one pint of boiling water over the meal, put the cover on the saucepan and left it to simmer for thirty minutes. We placed one lump of loaf sugar, one tablespoonful of cream, and a piece of butter as large as a hickory nut in a bowl and poured the gruel over them, and it was ready to be served. Indian gruel is carbonaceous.

OATMEAL GRUEL.—In preparing oatmeal gruel we put two even tablespoonfuls of oatmeal in a saucepan and poured on it one pint of boiling water. We added a grain of salt and left it to simmer for thirty minutes. We strained it through a sieve and added one lump of loaf sugar and the well-beaten white of one egg. One tablespoonful of whipped cream could have been added instead of the egg. Oatmeal gruel belongs to the nitrogenous class of food.

Both Indian and oatmeal have a laxative effect, so should not be used where there is a tendency to diarrhœa, unless made from boiled milk or else boiled a long time. If used when the stomach is unduly acid, one tablespoonful of limewater should be added.

PLUM PORRIDGE.—In making plum porridge we put one pint of milk in a double boiler and added twelve good-sized raisins from which we had removed the seeds. We covered the boiler and left them to cook for twenty minutes. We moistened one level teaspoonful of cornstarch with a little cold milk and added it to the hot milk, stirring while it cooked two minutes. We strained it through a sieve and added one lump of loaf sugar. It should be served while warm. Grape seed contain tannic acid; therefore they should always be left out of food.

PLAIN ARROWROOT GRUEL.—In preparing plain arrowroot gruel we moistened two level tablespoon-

fuls of arrowroot with a little cold water and then added one-half pint of boiling water. We cooked it until clear, then added one tablespoonful of sugar and two tablespoonfuls of sherry and it was ready to be used. This gruel belongs to the carbonaceous class of food.

ARROWROOT WITH EGG. — In preparing arrowroot with egg we separated one egg, and after beating the white and the yolk until light we mixed them together carefully. We then added slowly one pint of plain arrowroot gruel, and it was ready to be served with toasted crackers.

FARINA GRUEL.—In making farina gruel we sprinkled two level tablespoonfuls of Hecker's farina into one pint of milk in a double boiler. We stirred it and left it to cook for ten minutes, and then added one lump of loaf sugar and a grain of salt. It can also be made with water and served the same as Indian gruel, with butter, sugar and cream.

SAGO GRUEL.—In preparing gruel from sago we took two tablespoonfuls of sago and one pint of cold water, and after bringing them slowly to the boiling point we allowed them to boil for five minutes. We then took the gruel from the fire and added one lump of loaf sugar and two tablespoonfuls of sherry. It was served with strips of toasted bread.

GERMAN GRUEL.—In preparing German gruel we put one pint of wheat flour into a small bag of strong muslin, tied it tightly with twine, placed it in a kettle of boiling water, and left it there to boil for five hours. We then took it out, removed the cloth and peeled off the portion that was moist. We grated the ball, and having put it in a baking pan, dried it in a moderate oven for two hours, not allowing it to brown. When wanted for use we moistened two tablespoonfuls of the grated flour with a little cold water, stirred in one-half pint of boiling water and let it simmer for five minutes for common use. It should be simmered eight minutes for a patient troubled with diarrhœa, or three minutes for one troubled

with constipation. We added a grain of salt, one tablespoonful of sugar, and also one gill of milk to the gruel before serving. This gruel is considered good for children during the summer.

Rice Flour Gruel.—In making gruel from rice flour we mixed two even teaspoonfuls of the rice flour with four tablespoonfuls of cold milk and then added one-half pint of milk scalding hot. We put it in a double boiler and cooked it five minutes, stirring it all the time. We added a grain of salt, one lump of loaf sugar, one-fourth of a teaspoonful of ground cinnamon, and one teaspoonful of brandy. This gruel is considered beneficial in cases of diarrhœa.

Carrageen Gruel.—In making carrageen gruel we washed one-half ounce of Irish moss most thoroughly and put it in a double boiler with one pint of boiling water and kept it hot for two hours. We then strained it and added one-half cupful of granulated sugar and the juice of half a lemon. This gruel is soothing to the mucous membrane.

Apple Gruel is made by cooking one apple in a double boiler with half pint of water and thickening it with one teaspoonful of arrowroot moistened with a little cold water. The gruel can be worked through a sieve to ensure its freedom from lumps. This gruel is good in cases of chronic diarrhœa.

Peach Juice.—One teaspoonful of peach juice has been known to cure cholera infantum.

Cocoa.—In preparing cocoa we put one quart of milk in a double boiler on the stove. We moistened four tablespoonfuls of cocoa with a little cold milk and added it to the steaming hot milk, stirring all the time. We stirred it well, then covered the double boiler and let it steam for five minutes. It was served with whipped cream.

Broma and alkathrepta were made in the same way.

Cocoa from the Nibs.—In preparing cocoa from the nibs we put one-half cupful of the broken cocoa with two quarts of boiling water on the stove. When the water was reduced to one quart, in about two hours,

we added one pint of boiling cream and it was ready to be used.

RACAHOUT POWDER.—We made racahout powder by mixing and thoroughly rubbing together one pound of rice flour, one pound of confectioner's XXX sugar, one ounce of powdered salep, one pound of cocoa, two ounces of arrowroot, two ounces of sugar of milk and one vanilla bean. We put the powder in glass jars and screwed the tops on tightly.

Salep is an orchid and soothes, and when it cannot be obtained powdered slippery elm can be used in its place.

RACAHOUT.—In making racahout we put one pint of milk over the fire in a double boiler. We moistened one heaping tablespoonful of racahout powder with a little cold milk, and then added it to the hot milk and stirred it until it thickened. We added one tablespoonful of sugar and served it with a tablespoonful of whipped cream on the top.

RACAHOUT BLANC MANGE.—In making racahout blanc mange we put one pint of milk in a double boiler, and having moistened four tablespoonfuls of racahout powder and one of rice flour with a little cold milk, we added it to the hot milk and stirred it until it thickened. We then added one-half cupful of sugar, and after stirring it, turned it into small moulds to harden. It was served with unwhipped cream.

OATMEAL FOR BREAKFAST.—In preparing oatmeal we used one-half cupful of Akron, Irish or steel-cut oatmeal and one teaspoonful of salt to one and one-half pints of boiling water. We boiled it two hours and then kept it steaming hot until next morning. It should not be stirred while cooking, as that spoils its appearance. It was served while hot with sugar and cream.

WHEAT GRANULES.—In preparing wheat granules we added one teaspoonful of salt to one quart of boiling water and slowly sifted in one-half pint of wheat granules, stirring while so doing. We cooked them twenty minutes over a moderate fire. They are

served while warm with sugar and cream. Wheat granules are nitrogenous, being mostly gluten and salts, therefore they are not so heating as oatmeal and are better for summer breakfasts. They can be moulded for next day.

FARINA.—In preparing farina we added one teaspoonful of salt to one quart of boiling water or milk and slowly sifted in enough farina to make a gruel. We stirred it well and allowed it to boil thirty minutes. It was served with sugar and cream.

RYE MUSH.—In making rye mush we slowly sifted five heaping tablespoonfuls of rye meal into one quart of boiling water, stirring all the time. We added one teaspoonful of salt and stirred until it boiled, then we put on the cover and left it to cook slowly for one hour. It was served with sugar and cream.

CRACKED WHEAT.—In preparing cracked wheat we mixed six tablespoonfuls of the cracked wheat with one teaspoonful of salt and one quart of water. We put it in a double boiler and left it to steam or cook for four hours. It was served warm, with sugar and cream. It is very nice if steamed all night, the same as the oatmeal.

Your affectionate cousin,

VIRGINIA REED.

LETTER VIII.

December 5, 189–.

My Dear Cousin Alethea: The doctor has delivered his last lecture before our class and I will now write out what I can of three lectures.

Good teeth are essential to good digestion and good organism. The mother who would have her child possess good teeth should herself use good bone and tooth-forming food; that is, such as are rich in lime, potash and soda. When the child arrives it should use something similar. Cow's milk is better than that of an anæmic mother. When the child is old enough let it use cereals, as they contain the necessary ingredients. When you would make an organ strong, give it work to do.

A food substance can go through an animal, but food to be assimilated must be properly masticated. While food is being masticated the parotid glands throw out a clear, viscid fluid; the sublingual and submaxillary glands also throw out fluids. The fluid from all three is alkaline and has ptyalin in it. Ptyalin is the ferment in the mouth and acts on starch. Wheat chewed and mixed with saliva has a part of its starch grains broken, which when acted upon by the ptyalin is converted into dextrin and is soluble—the gluten would not become soluble in an alkaline solution. There is no absorption in the mouth cavity. When the wheat has become so mingled with the saliva as to be easily swallowed, it is carried down the œsophagus into the stomach. A normal stomach holds about three pints.

The churning, peristaltic motion of the stomach is caused by the three sets of muscular fibres—longi-

tudinal, circular, and oblique—which compose the muscular coat of the stomach. This churning motion of the stomach is called trituration.

The mucous lining of the stomach secretes the gastric fluid. Special glands secrete the hydrochloric acid and the pepsin. These secretions act on the nitrogenous part of our food, which is converted into peptone, in which condition it enters the circulation.

In a mixed diet the saccharine in solution, or liquid portion, is absorbed by the stomach; the rest remains four or five hours until chymefied. It is then passed through the pylorus into that division of the small intestine called the duodenum. When the heart is weak, the digestion feeble from age or disease, food substances sometimes stay in the stomach so long that they become putrid and are thrown up.

At the head of the colon is found an appendix from two to seven and one-half inches in length. It has been found to point to the various points of the compass. Its use is not known. The colon is from two to five times the diameter of the small intestine, and a sluggish condition might give rise to over-distension, which would cause food to collect in the appendix. There being no way to expel the substance, it putrefies and becomes inoculated with germs, causing inflammation and ulceration, which diseased condition is called appendicitis.

Dress certainly has some effect on digestion and the internal organs. Lacing causes intestinal troubles and induces paralysis. It also, by diminishing the lung space, diminishes the supply of oxygen.

The liver is the largest gland in the body, and in a healthy subject sometimes weighs four pounds. Bile, a secretion of the liver, is used for the emulsifying of fats. The pancreas is another gland and secretes a fluid containing three ferments: the trypsin which acts on nitrogenous food substances, amylopsin which acts on raw starches, and steapsin which acts on fats. The duct that conveys the bile from the liver, and the one that conveys the pancreatic secretion from the

Pancreas, unite and enter the duodenum about two inches from the pylorus. Biliousness is the result of food rotting for the want of the proper action of digestion. Fermentation is caused by the presence of germs, and their poison, known as ptomains, going through the system and causing severe trouble.

The doctor defined the physiology of the digestive tract as being the science which teaches the workings of the organs in health.

Our food has been classified by scientists as carbonaceous and nitrogenous. The carbonaceous has been divided into saccharine, oleaginous, and starchy. From our carbonaceous food we obtain force and heat, and our surplus fat is that much stored-up energy. Fats are two to four times more valuable than starches. We ought to consider the amount any one should use. We must consider the amount of force expended and vary the amount according to the work to be done and the time of the year.

If the digestion is good we obtain certain results, therefore we ought to vary the food according to age, condition and occupation. In the summer the food should be more cooling than in winter. One pound of meat to two and one-half of starchy food is the amount for a normal person, subjected, of course, to the above conditions.

Nitrogenous food is never pure; it is always mingled more or less with the carbonaceous. Albumins are the parts of the nitrogenous food which are called tissue builders and repairers of bone, nerve and muscle.

Every action has a reaction, and those who eat starch in excess store up fat; but they must have meat to build up tissue, and really the nitrogenous food is more easily digested and assimilated than starchy food. We must have both to keep the body in good condition.

Ordinary animals have no mental strain and therefore would be able to vary with less disturbance than we could. We have found that we can vary an

animal's diet very little without causing trouble. Nature goes slowly. Indeed, no sudden action is good in nature. Vary, and though the mischief is remote, it is certain. The proportions required by most people have been found to be 3.70 fats or oils, 64.95 carbonaceous, and 7.83 albumins. The most of our nitrogen comes from the animal kingdom. Our nation requires more of it than other nations because more active. We prefer to take it from the albumins on account of the quick returns. Sulphur is most abundant in nitrogenous food.

Auxiliary food such as tea and coffee, and condiments such as salt and spices, aid in assimilating other food and in making it more palatable. Water being liquid has the power to dissolve and carry out the waste matter from the system, and must be used clear to increase the blood supply, and not all saturated merely as a dilutant for food.

The skin is important and gives off one-fourth as much as the kidneys and one-third as much as the lungs. We should drink one and one-half pints of water per day, taking it three or four hours after our meals. Taking this quantity of water lessens the desire for tea or coffee, or such an abundance of them at meal time. Milk taken with a solid meal is a surplus, and when taken often causes biliousness. Water taken plentifully makes plenty of secretions, which are necessary for the regular action of the system.

Where the food is too concentrated add something indigestible, such as vegetables containing a large amount of waste, indigestible material, to keep up the action, because daily excreta is necessary to perfect health. Sugar when not stored up in the liver is passed on and made into fats.

Food taken in must be sent on. The carbonaceous is burned up, forming heat units and carbon dioxid. The lungs act as the smokestack and throw off the carbon dioxide. Some of the waste is expelled by the skin, but most of the waste or ashes is sent out by the rectum.

When the lungs are diseased give them rest by cutting off the carbons. When only weak they will gain strength by having work to do, so you should increase gradually the amount of carbons. You relieve diseased lungs by increasing the action of the bowels and skin.

The waste from nitrogenous matter is mostly expelled by the kidneys, though the skin with its two million pores helps considerably. It expels about two pounds per day, most of which is nitrogenous, though there is a little carbonaceous.

Sugar and starches are eventually converted into carbon dioxid and heat units, so if for any reason you cannot use them, increase the consumption of oils or fats and so keep up the system.

The doctor gave us the titles of several books which he thought would be of service to us. "Food in Health and Disease," by Yeo, he considered the best. Fathergill and Chambers on "Diet and Indigestion," he considered valuable. "Food," by Edward Smith; "Food and Dietary," by R. W. Burnett; "Digestion and Diet," by Roberts; "Domestic Hygiene," by Uffmann, translated by Mary Putnam Jacobi, were good.

Doctor spoke next of the diseases of the digestive tract, and is of the opinion that what diseases we get directly and positively we get by swallowing them in our food. We do not get typhoid fever by impure atmosphere and excreta, although we might get typhus in that way. Diphtheria you get by swallowing, hence do not put anything in your mouth that has not been properly disinfected after having been contaminated. He was not so certain about scarlet fever, but thinks it also is swallowed, otherwise we could quarantine against it. We breathe in the scales the scarlet fever patient throws off and then swallow them, because if they reached the lungs we would cough them up as we do dust.

We should be very particular about our food. Look to the mouth first; see that there are no decayed spots in the teeth and that the tartar is cleaned off,

because particles of food find lodgment there, decompose and are carried on into the stomach with the next food, and cause disturbance of the digestion and disease. Therefore the mouth must be kept clean. The tonsils sometimes become inflamed and instead of throwing out their secretion retain it until it becomes cheesy and drops with the food, causing disease.

Catarrhal trouble is a fruitful cause of indigestion. Smokers frequently have what is called aphthous patches in their mouths. These patches give forth a milky fluid which is another cause of indigestion.

There is one rule of primary importance in chronic disease of an organ: gradually give the organ exercise until it gets back to a normal condition. It needs, however, very careful management, as too much exercise is worse than not enough. The organ should have help in performing its work, and be aided in every way to regain its normal function.

In an acute trouble give the organ rest until it has recovered its usual strength. Many diseases can be cured by diet alone.

Gastric trouble cannot be relieved while the person eats the wrong thing or eats irregularly.

In acute indigestion food should be withheld from one to five days. If the indigestion arises from overloading the stomach, relief may be obtained by taking an emetic or a mild laxative. If an emetic is taken it should be such as warm water with mustard in it, never ipecac. Then the organ will be so inflamed that it should be given rest. Of course, the patients can have what water they want at from 48° to 50° Fahrenheit, or hot water. After the fever is gone there will be an intense craving for food several times in twenty-four hours. You must distinguish between notion and craving, and remember that the mind is weak as well as the body, so you must use your own judgment regardless of whims. The fever will be gone and the tongue will become clear in from twenty-four to seventy-two hours. Then give semi-liquid food, such as milk with toast, or mutton broth with

barley in it, two hours apart. Never make a sudden change.

In chronic dyspepsia give the same food as in acute. They will improve more rapidly if they take exercise in the open air, because the exercise increases the circulation and makes them take in more oxygen, which gives them more pure blood to invigorate the organ. Gradually get the diet back to meat, eggs, and fruits properly prepared, regardless of what they want. They have to pay the penalty for having eaten wrong things.

Many diseases, such as skin diseases, are caused by faulty digestion.

The doctor spoke of one of his patients troubled with eczema caused by excessive use of nitrogenous food. He allowed the patient but two quarts of milk per day and all the water he wanted. After three weeks' treatment he was very much improved. All the medicine given was a little laxative and corrective for the digestion.

Very rich milk or fatty matter will cause this skin trouble in children. He knew of one case where changing from a Jersey to a common cow effected a cure. The object is to cure, and where that result is not obtained science is at fault.

Intestinal indigestion comes on one hour after eating. There is rumbling and flatulency, and after a time the dilation becomes chronic. It can be cured by reducing the quantity of food, and using massage and sometimes electricity.

Nine-tenths of the cases of typhoid fever can be cured without medicine if the patient is put at rest, and given proper care, with proper liquid food and proper stimulants. Medicine would be necessary in scarlet fever if the fever were complicated with kidney trouble. If the temperature rises above one hundred you make up for the burning up by furnishing more of the fuel required, unless the trouble is acute; then you let the patient burn up the fuel he has stored in his body and make up the amount to him during conva-

lescence. Use milk and barley water, partly malted food like Mellin's, and maltine—not thin malts, because they are too much like porter. They are not good for gouty or rheumatic patients, though of the utmost advantage for other patients when boiled with milk or broths. Be careful about using chicken broth, because it is laxative.

If ulcer should occur in typhoid fever great care will be necessary, as the ulcer does not heal until the fever has left; and the return to solid food must also be attended with care. It is best to wait seven days, then give milk toast with the crust cut off. When you first let them have meat, let them only chew it, rejecting every particle of fibre.

Local troubles, such as appendicitis, bilious colic and peritonitis cannot be cured by diet.

In chronic troubles, cut down the amount till you know what the organs can do, then gradually build up. People seldom have acute inflammation of the kidneys unless they use too much nitrogenous food. To cure, increase the activity of the skin and the amount of the carbons, and decrease the amount of nitrogenous food.

Pneumonia being an acute inflammation due to a cold, or resulting from a severe cold, it is better to call for heat on the stored-up fats and cut off the carbonaceous foods. Give broths.

The nitrogenous principle from vegetables are harder to digest than those of animal origin. If you cut off all food and decrease the circulation by giving dilutants, the fever will subside more rapidly, sometimes in twenty-four hours.

Animal food, egg, meat and green vegetables are preferable to starchy foods. Use alcoholic stimulants very sparingly, unless the heart demands it. Increase the action of the skin,

In consumption, many of the patients can be cured. As in other chronic diseases you find out how much the patient can digest and gradually increase the action

of the organs. Oil and cream are very good, and all foods that agree with the patient.

In cases of acute stomach indigestion give mostly starchy foods. To relieve an acute condition of the mucous membrane, decrease the work of the lungs by increasing that of the skin in giving a sweat. Give all the water they wish to drink. Keep the patient quiet and warm. The patient should drink one quart of cold, soft water before going to bed and soak his feet in hot water, then cover up warm. Very little food should be taken.

If a person is continually taking cold, he should take a cold bath, or one just warm enough to keep from chilling, and then rub down well. A continual taking cold produces an enlargement of the part affected. A very hot bath paralyzes the vasomotor nerves, the capillaries dilate, and the blood comes to the surface, making one red.

The doctor thought that in very many cases the recovery depended more upon having proper articles of food, properly prepared, than upon the medicine.

I will now write out the way in which we made gluten bread. It can be used by the diabetic, though we liked the taste of it ourselves. The gluten flour is so much more expensive than common flour that people in good health do not make much use of it.

Gluten Bread.—We scalded one pint of sweet milk by pouring into it one pint of boiling water. We then beat two eggs, without separating them, until light, and added them to the milk and water. When the milk was lukewarm we added one-half cake of compressed yeast that had been dissolved in two tablespoonfuls of lukewarm water; also added one ounce of butter and enough gluten flour to make a soft dough. It must be much softer than for white bread. We beat it well for about fifteen minutes, then poured it into greased pans, and covered it until very light, when we put it into a hot oven and baked it forty-five minutes.

Gluten Gems.—For gluten gems we beat one egg without separating, added to it one-half pint of water and then stirred in one-half pint of gluten flour. We beat it well and poured it into gem pans that had been heated and well greased. We baked them in a quick oven for twenty-five or thirty minutes.

Your affectionate cousin,
Virginia Reed.

LETTER IX.

December 8, 189–.

My Dear Cousin Alethea: Our teachers often answer questions, and talk about the various diseases, and give us hints as to feeding the patients. In all cases, however, it is best to consult the physician in charge, because there might be such complications as would render it unwise to give certain articles. I know from experience that it is hard sometimes to think of any food suitable for the occasion, so I tried not to lose a single suggestion.

In Rheumatism it is the serum, not the corpuscles of the blood, that is treated. It is usually caused by excess of nitrogenous matter or port wine, though it may be brought on by exposure after meals. In rheumatism and gout, take away from the patients all albumins. They can have *no* beef and very little veal. No sugar, as it turns to acid, nor oatmeal, nor potatoes, for the same reason. Lettuce contains nitre, therefore can be used freely, because the waste of nitrogenous matter is thrown off by the skin and kidneys. Candies are converted into acids where there is a predisposition to rheumatism; therefore such persons should avoid them and supply force by fats of meat and olive oil. The skin should be kept very clean by bathing. In some cases they give alcoholic sweats and rub well with a flesh brush. Chalk deposits are caused by uric acid in the blood. Use all green vegetables growing above the ground. In gout the acid of fruits helps to neutralize the acid of the blood. Fish can be used in some cases, because they contain less acid than other meat.

In Diabetes take away from the patients all sugar

and starch, but increase the amount of albumin. Give all vegetables growing above the ground, but *not* old or dry beans or peas. They can have onions and turnips and gluten bread, but it would be better if they would do without any bread. They can use all nuts except chestnuts. They can have bouillon, consommé, and all meats except pork and veal. Milk, with the white of one egg to the cup, may be taken comfortably cold, but no ice water for them or for any one else. For dessert use Japanese gelatin made from seaweed. Having carefully washed one-fourth of an ounce of seaweed, put it into one quart of boiling water and boil it one hour. When less water is used and some milk is added to finish cooking it, it looks like blanc mange. Different flavorings can be used with gelatin, but do not use pineapple with animal gelatin, because bromelin, which is the active principle of the pineapple, has the power of digesting albuminoids, on account of which the gelatin could not long retain a moulded form; and for the same reason eggs should not be used with pineapple. When a pineapple dessert is desired for a diabetic, use the Japanese gelatin with the pineapple, though the pineapple may be combined with some starchy material for other people.

Brain trouble, such as prolonged mental anxiety and dietetic errors, are predisposing causes of diabetes, though it may be due to degeneration of the pancreas and liver. Patients should bathe twice a week in hot, salted water, and afterward rub well with sweet oil and glycerin. The other days they should take a sponge bath, using ammonia in the water. They should wear silk or flannel next to the skin and spend two-thirds of the time in the open air.

Diabetics may use one-quarter of a pound of butter a day. They also can use wafers made from almond meal and eggs, and rolls made of the almond meal with the unbeaten whites of eggs. Great care must be exercised in coming back to common diet. Give but half a slice of gluten bread, and that toasted, and at the end of five weeks allow one-third as much bread as meat.

Different doctors vary the treatment according to the patient. Some use nothing but milk, gradually increasing the quantity from two tablespoonfuls to one cupful at a time, using two quarts daily and taking it unheated. Others think a meat diet is best, so they make a pulp from the meat by scraping it, so as to avoid all fibre, cartilage and fat. They season this meat pulp with salt, a little pepper, and Worcestershire sauce or chetney. They allow celery with every meal, and use hot water for a drink. Others allow cranberries, sour cherries, limes, lemons, red currants, and also olives, watercress, green vegetables—but no turnips—oysters or liver; and let them drink buttermilk, skim-milk, sour wines (Rhine wines), carbonated waters, coffee and tea without sugar.

In preparing cranberries for a diabetic, to one pint of well-washed cranberries add one-half pint of water and boil them until the berries burst, then press them through a colander and add six grains of saccharine.

In making saccharine jelly, dissolve one half box of gelatin in one-half pint of cold water. Add the juice of one large lemon and one-half pint of boiling water, and after adding six grains of saccharine turn it into a mould to harden.

In Bright's Disease the urine is scanty and the kidneys excrete albumin. To test, boil the urine and add vinegar; if it separates and appears like the white of a boiled egg, there is albumin present. Too much nitrogenous food has broken down the kidneys; so now live on starchy food. For acute attacks, one-half milk and one-half barley water is considered a great cure, or gruels strained and made light by adding whipped cream. Cut off all meats and give all the milk they want. Cream and leban are also good for them. Be very careful about chilling the surface, as that might bring on an attack of Bright's disease or instantly kill those having it.

Hard water or too much baking soda may bring on gravel.

Spinach contains nitre and is said to purify the

blood. Lettuce contains nitre as well as opium, and therefore acts on the kidneys. Poke shoots and dandelion act on the liver and kidneys. Asparagin works on the kidneys and is found in asparagus and in a small quantity in the white potato.

Typhoid Fever is caused by microbes fastening themselves in Peyer's patches in the duodenum. The fever makes its appearance as a rash, generally over the abdomen, though sometimes it comes under the shoulder blades or arms. Typhoid fever sometimes affects the heart, so be very careful about moving a patient. After the heart becomes weak, the blood does not circulate properly, and sometimes a clot of blood will form in a vein and the limb should be put into splints and kept still for three weeks. It is wise to wear a bandage for a year or more, because if these verrucose veins burst they never heal. To touch the part affected in flevitus causes pain. In typhoid, sometimes the lungs are affected, in which case the patient should lie on his back, but if the heart is affected he should lie on the right side. Sometimes the blood becomes so impoverished that it causes various glands over the body to open as running sores. The brain and heart are weak, so must not be overtaxed.

Give the food cold unless ordered otherwise by the physician, because anything warm draws the blood to the stomach, and so is more liable to cause a hemorrhage. All food should be liquid, and when milk disagrees, or they want a change, give a broth flavored with a clove, a bay leaf, mace or celery. Matzoon is excellent. Dishes prepared from Irish moss are good in fever, because the moss has a soothing effect on the intestinal tract. Give a teaspoonful or a tablespoonful as they desire. All vegetables are to be cut off in typhoid fever as well as in cholera. Sometimes, instead of beef tea, give chicken tea made from the thigh and leg, seasoned with a little salt and pepper. In some cases every other feeding should be two tablespoonfuls of beef tea (a stimulant) and the other

should be milk and barley water (a food). The patient will sink as soon as there is a perforation. Always move the patient with the greatest care.

Not wishing to tire you out with diseases in this letter, I will now give you a few recipes for preparing eatables.

LEMON JELLY.—In making lemon jelly we covered one box of gelatin with one pint of cold water and let it soak one hour. We then added one quart of boiling water, one pound of sugar and the juice of three large lemons. Having stirred until the sugar was dissolved, we strained it through a sieve into a mould and stood it in a cold place to harden.

WINE JELLY.—In making wine jelly we poured one-half pint of cold water on one box of gelatin and left it to soak for one hour. We then added one pint of boiling water and two tablespoonfuls of sugar and stirred until the sugar was dissolved. We then added one pint of sherry and strained it through a flannel into moulds, which we stood away to harden.

CALF'S FOOT JELLY.—In making jelly from a calf's feet we washed and scrubbed well four feet in cold water. We put them in a soup kettle, added four quarts of cold water and placed it where it would simmer slowly for several hours, until the liquid was reduced to two quarts, and then strained it into an earthen bowl, which we placed where it would keep cool until next day. In the morning we took off all the fat from the top of the jelly and removed all the sediment from the bottom. We then put the jelly in a kettle on the stove and added two inches of stick cinnamon, one pound of white sugar, the juice of two oranges, and also of two lemons, the whites of two eggs slightly beaten, and the crushed shells of eight eggs. We mixed all the ingredients well together and left it where it would boil hard for twenty minutes without being stirred. We then threw in one gill of cold water, and when it had come to the boiling point, we drew it to a cooler part of the range and

left it closely covered for one-half hour. We dipped a flannel jelly bag into boiling water and hung it up over a bowl. We then carefully poured the jelly into the bag and left it to drip slowly. We were very particular not to touch or squeeze the bag, as that would cloud the jelly. We then turned the jelly into moulds and put it in a cold place to harden. When wine is to be added it should be put in before the jelly is turned into the moulds. One-half pint of sherry would be the correct amount to add.

Dry Toast.—In preparing dry toast we cut stale bread into slices and slightly moistened each slice by dipping it quickly into hot water. We put it in the toaster and held it over a clear fire, turning first one side and then the other, until both sides were dry, and then toasted a golden brown. Each piece of toast we spread quickly with butter, and piling them on a heated plate, we covered them with a napkin and the toast was ready to be served.

Milk Toast.—In making milk toast we dipped very quickly four small slices of stale bread into hot water, and after drying them on both sides we toasted them a golden brown and spread each slice while hot with butter. We put one pint of milk in a double boiler, and having moistened one tablespoonful of cornstarch with a little cold milk, we added it to the hot milk in the boiler and stirred until it thickened. We added one-fourth of a teaspoonful of salt, and then poured the milk over the toast, which should be served immediately.

Cream Toast.—In preparing cream toast we toasted the bread as for milk toast, but did not butter it. We heated one pint of cream and added one-fourth of a teaspoonful of salt and poured it over the toast, which should be served at once.

Panada.—In making panada we cut six stale rusks into halves and put them into the oven until they were a golden brown and thoroughly dried. When cool we placed two pieces in a bowl and added one tablespoonful of butter, one-half pint of boiling water and two tablespoonfuls of sugar.

Poached Eggs.—In poaching eggs we selected those that we were sure were fresh, because the shell looked dull and porous, and when held up before a strong light the yolk appeared round and the white surrounding it clear, and when put in a bucket of water the fresh ones sank at once. We had a stewpan more than half-full of freshly boiling water, and after removing it from the fire we gently slipped an egg into the water from a saucer upon which we had broken it. We added as many eggs as desired, or until the bottom of the pan was covered. We returned the stewpan to the stove, and when the water boiled again the eggs were done. The white had hardened enough to look like a veil, through which you could see the yolk. We took up each egg on a kind of skimmer, and having trimmed off the ragged edge, placed it on a slice of buttered toast, which should then be served at once.

Boiled Eggs.—In boiling eggs, especially in cold weather, the eggs should be kept one hour in the room before putting them on to boil, because the sudden expansion of the contents of the shell when immersed in the boiling water will cause the shell to crack. Stale eggs do not crack so easily as fresh ones, because part of their liquid has evaporated and been replaced by air. We placed a large stewer filled two-thirds full of water on the range, and when the water boiled we dropped the eggs into the boiling water. We covered the vessel closely and placed it on the part of the range where it could not boil. When the eggs had been five minutes in the water we took them out, because the white, though liquid, was cooked, and being soft-boiled they were pronounced easy to digest.

Apple Water.—In preparing apple water we roasted a good-sized apple until tender. Carefully placing the apple with all of its juice in a bowl, we poured one pint of boiling water over it, and covering it up closely let it stand until cold. When wanted we drained the water from the apple and added a little sugar for those patients who are permitted to use sugar.

Toast Water.—In preparing toast water we cut a slice one-half inch thick from a five-cent loaf and toasted it over a slow fire until it was a dark brown and dried through. We were very particular not to let it scorch, as that would spoil the flavor. Having placed the toast in a bowl we poured over it one pint of boiling water. After having stood until cold we strained it and it was ready to be used. Toast water quenches thirst more quickly than plain water and contains a very little nutrition.

Cinnamon Tea.—In making cinnamon tea we broke one-half ounce of stick cinnamon into small pieces, and having put them into a granite teapot we poured on them one pint of boiling water. We let it steep on the stove for ten minutes and it was ready to use. This tea is good to warm up a patient having diarrhœa.

Your affectionate cousin,

Virginia Reed.

LETTER X.

December 12, 189–.

My Dear Cousin Alethea: Phthisis, cholera infantum, mirasmus and consumption of the bowels are forms of non-assimilation.. The primary cause is fermentation in the stomach. If a person dislikes fats, then the lungs are the part to break down first; therefore such persons ought to build up their muscles and tissues. Children should not have the fat cut off from their meat. Old folks should be particular to eat some fruit and drink plenty of water.

Consumptives should use an extra amount of nitrogen and fats, and decrease the starches and sugars. Fats create more heat than the starches and sugars. Never insist on any one using the fat of beef, because it is muscular and when cooked is changed. Mutton fat is much better. Some doctors recommend beef tea, meat and salad oil. One teaspoonful of oil daily is enough, and is best when taken with other food. Two-inch squares of whole wheat bread toasted and eaten with as much butter is good; so, also, is rice with rich cream. Olive oil being a fruit oil is the best for consumptives. Never give them seed oils, because they are drying. Give the oil on green salads. To one pint of beef tea add two ounces of dry albumin, and have the patient use one pint each day. A patient must have plenty of fresh air. If confined to the house, move the patient to another room and air his room three times a day, so he need not breathe the poisonous carbon monoxid. Be sure the temperature is right before the patient returns to the room. Many think the air of pines, such as those of New

Jersey, is as good as that of Colorado, and the pine odor is healing.

Never force a patient to take anything he does not want, but make everything agreeable, tasty and sightly. Never give candies, because they affect the liver. Be careful not to upset the stomach, and give food five times a day. Give hot milk before he gets up in the morning, and again before going to bed, as that tends to draw the blood from the head and enables him to sleep well. Always sip milk, and do not give it to a consumptive cold, unless as milk punch with raw egg in it. Give beef at least once a day—tenderloin broiled or chopped fine and baked, game occasionally, oysters and tripe with cream sauce is excellent. Never give fish, as it might upset the stomach. Keep the patient very warm. If he dislikes fats, rub him well with warm water till you get up a glow, then rub in about three tablespoonfuls of cod-liver oil, though almond oil would do. To the bath you can add alcohol, whisky, vinegar or cologne. Bathe with powdered alum dissolved in alcohol to prevent bed sores.

The patient could have a slice of Brazilian nuts occasionally. Rice would be the best form of starch. Leban and koumiss are good; so are green vegetables; but give no potatoes or oatmeal. Egg, whipped, taken raw or cooked, is excellent; or, whip the white and yolk of an egg separately and add sugar and sherry. You can add brandy to the whipped egg. To arrow-root gruel you can add lemon or brandy. Barthelow's food, with a little celery salt added, is an admirable food; and Irish moss is also good. Let the stomach have a little rest between each feeding.

Some doctors claim that the first stage is caused by the fermentation of sugars and acids. The stomach has become a yeast garden, producing sour yeast and alcohol; and if this condition is continued it passes into the blood and the blood becomes thinner, then ropy and sticky. There is a tendency to tire and get out of breath, and a marked tendency to have cold

feet. This condition sometimes lasts two years. Sometimes the heart does not throw the blood to the head, so the patient becomes dizzy. After yeasty fermentation has continued for some time the pylorus becomes so paralyzed that it cannot stay closed, so the blood becomes impaired, and after it is loaded with bile, the pulse will be slow, and in the last stage the feet swell. Before the last stage the heart becomes fatty, the liver and spleen amyloid, and though the yeasty products drop into the small intestine, there is still a chance of recovery. In the third stage many patients are troubled with a chronic diarrhœa.

In all stages, diet, exercise and surrounding conditions are to be carefully attended to. Keep the bowels clear from yeasty fermentation. Sour yeasty spores, after they have entered the blood, multiply and cannot pass through in oxidization. At first consumption is confined exclusively to the digestive organs, but if continued long the mucous lining becomes paralyzed. In many cases Virginia claret is better than fruits and sugar. Avoid tannin, because it causes constipation. If a patient sinks quickly, give liquor to tide over. In miner's consumption the air cells are filled with coal.

When the lungs are weak, protect the back across the shoulders with an extra flannel.

In ASTHMA the local manifestation is in the eyes, larynx, and bronchial tubes. The paroxysms are nervous in origin. The primary cause is unhealthy feeding and overeating. Keep the stomach clean and the improvement will be more rapid. Fruit and meat are the best cure. The stomach is the hub where all revolve. Asthmatic people are very apt to take cold, so they must keep the extremities warm and avoid taking cold, because all colds travel downward, and a very heavy cold travels quickly; so look out for the lungs. A person having indigestion with flatulency is apt to have a cold settle in the air passages. In asthma cut off all sugars and starches for the time being. If taken off too long the kidneys would break down.

Give grapes three times a day. Cakes made from corn are more easily digested than those made from wheat. In acute paroxysms use strong coffee. Strong coffee sometimes produces tremblings

Cold causes indigestion. Clear the system by drinking hot water and do not overeat. Use meats, but never any of the cereals.

Clergymen's Sore Throat is caused by improper use of the vocal cords, irritated by the impure air from the audience beating against the wall and then down on the speaker.

Paralysis.—Remember that in paralysis fruit helps to keep the blood in a liquid condition.

Scrofula.—The Indians do not allow those having a tendency to scrofula to use salt, sugar, spice, or condiments. Take plenty of outdoor exercise, living in the open air as much as possible. Take little starchy food and no sweets. Use plenty of fats, but no shell-fish or anything that is a scavenger. Do not touch a scrofulous swelling, but take oil to keep them down.

Bowel Trouble.—Irish moss made into the form of blanc mange is good in bowel trouble, because it has a soothing effect on the mucous membrane. Leafy products having a full green color possess more or less purgative properties, while herbaceous articles have high antiscorbutic virtue. Apples, on account of containing salts and phosphorus, strengthen the lower bowel, and are good in diarrhœa or constipation. Apple gruel and plum porridge are especially good for using in chronic diarrhœa. Succulent food, either fruits or vegetables, moves the bowels, while farinaceous seeds do not stimulate to action. Eggs are constipating. Those troubled with constipation should walk from five to ten miles a day and avoid sitting. Fibre of meat sometimes causes diarrhœa. In diarrhœa keep the patient still, even if you have to put him in splints.

Too much sugar makes one bilious and the skin rough. Predigested food is given only when a person has not strength to digest it. Leban will stay on the

stomach when nothing else will. Those who cannot digest oil should rub it in over the abdomen.

In SCARLET FEVER do not give egg or beef tea. Give starches. Whey would be good. Give nothing that works on the skin or kidneys.

WINE WHEY.—In making wine whey we put one cup of milk in a double boiler, and when steaming hot we added one-fourth of a cup, or four tablespoonfuls, of sherry wine quickly, and then removed it at once from the fire and strained it through two thicknesses of cheesecloth. This is to be used by weak persons needing stimulants, and can be served with or without sugar. We were very particular to see that every particle of curd was removed.

CUP CUSTARDS.—In preparing cup custards we beat four eggs all together until light. (Four is the least number that will thicken one quart.) We added one-half cupful of sugar, one-fourth of a grated nutmeg, and one quart of sweet milk. Having stirred until the sugar was dissolved, we poured it into custard cups. We placed these cups in a pan of boiling water and put it into the oven. We left them to bake until firm in the center. We tested them by putting the handle of a spoon in the center; when the custard did not stick to the handle it was pronounced done, and we removed the cups from the water and stood them away to cool. They are served in the same cups in which they were baked.

APPLE SNOW.—In preparing apple snow we pared, cored and steamed six good-sized apples. When tender we pressed them through a sieve and left them to cool. When cold we added one cup of sugar and the juice of one lemon. We beat the whites of six eggs until very stiff and then added the apples, one spoonful at a time, and kept on beating till all the apples had been worked in. It was dipped into glasses and served at once.

VELVET CREAM.—In preparing velvet cream we put one-fourth of a box of granulated gelatin to soak in

one-fourth of a cup of cold water. When it had soaked one half hour we added one cup of cream, and standing the saucepan over the teakettle of boiling water, having first removed the teakettle lid (a double boiler would do as well), we stirred until all the gelatin was dissolved. We added one-half cup of sugar and continued to stir until we had added another cup of cream and one gill of sherry wine. We strained it into a mould and put it in a cold place to harden.

CARRAGEEN.—In preparing carrageen we washed one-fourth of a cupful of Irish moss through several waters and then added one pint of milk. When it was soft and white, in about thirty minutes, we turned it into a double boiler and stirred it until the milk was steaming hot. We added one-fourth of a cup of sugar and strained it into small moulds. It was to be served very cold with cream, sweetened and flavored with wine.

CRYSTALLIZED EGGS.—In crystallizing eggs we separated them and spread the unbeaten white out on a plate and placed it where it would evaporate quickly. We bottled the thoroughly dried flakes. The whites of from three to six eggs can be added to one pint of clarified beef tea and used in fevers. By dissolving the crystallized eggs in cold water as we would gelatin they can be beaten stiff and used in cakes.

SEPARATED EGG.—In preparing a separated egg the white was beaten until light, but not stiff. We then turned the white into a small bowl or cup and placed the unbroken yolk in a slight depression in the center. We placed the cup in a pan of hot water in the oven and covered it over with another pan and baked it from one and a half to two minutes. When done we added a trifle of butter, a little salt, but no pepper.

LENTIL GRUEL.—In preparing lentil gruel we soaked one-half pint of lentils over night, having previously looked them over and washed them. We drained off that water, and added fresh soft water and cooked them until tender, and after pouring off the water we pressed them through a sieve. It looked like a thick

apple sauce. We added butter and salt. Serve two tablespoonfuls in one cup of hot milk. This gruel is good sometimes for lying-in patients. So, also, is Indian gruel.

SUET IN MILK.—In preparing suet in milk, which is good for those suffering from lung trouble, we chopped one ounce of suet fine and simmered it thirty minutes, in a double boiler, with one quart of milk. We strained it carefully through two thicknesses of cheesecloth. It should then be salted to taste.

LEBAN.—In making leban we boiled milk, and when it was cool enough for us to be able to hold a finger in it, we added one tablespoonful of leban to each half pint of the boiled sweet milk. We covered it and allowed it to stand in a warm place for about four hours, until it was in a solid condition. When cold we beat it up, bottled it and kept it in a cold place. Leban when beaten up as for bottling is called matzoon. Leban is very nutritive and the stomach will take it when it can retain nothing else. Leban must be prepared each week, as it will not keep longer.

I thought perhaps you would like to try this matzoon, so I inquired about it and found you could buy a bottle by sending to 272 and 274 Forty-second Street, near Cottage Grove Avenue, Chicago. The Armenians grow very enthusiastic in speaking of leban. They declare that if men had leban and coffee served to them in a comfortable room, they would not care for drink. They would have a nourishing food and so would not crave a stimulant.

Your affectionate cousin,

VIRGINIA REED.

LETTER XI.

December 17, 189–.

My Dear Cousin Alethea: It is now about three weeks since the Food Exposition closed, and about two weeks since we finished the course of Invalid Cookery, so now we have one lecture from the professor of chemistry each week, and a few questions each day, and also cook some. It seems most delightful to have the quiet and regular work of the schoolroom after the crowded rooms and excitement of the Exposition. Of a truth, too much even of a good thing grows wearisome. There were several others who joined the school just for the health notes and invalid cookery. Now, again, we are only seven.

I believe the last lecture from the professor, that I wrote off for you, was about "Microbes." The next lecture was about "Plants and Starch."

Plants both feed and have a respiration. They help to complete the circle of nature, for, wherever there is decomposition or putrefaction, the microbes feed on the proteids. The nitrogen is sometimes set free, but generally it goes through changes by which it is converted into ammonium compounds and then into nitrates. These nitrates are lodged in the soil, from which they are drawn by plants in feeding. The plant does not take in nitrogen as we do air. The green coloring matter of plants corresponds to the red corpuscles of our blood. This green coloring matter, or chlorophyll, receives carbon and water from the air, and its force comes from the sun. Plants which do not receive light are devoid of chlorophyll.

All plants do not draw their sustenance from the ground, because some fasten themselves upon other

plants and assimilate the food they have prepared. Such plants do not possess chlorophyll, because they have no need for it. There are many beautiful varieties of these parasites. Some plants are said to be epiphytic, because while growing upon others they partly support themselves. To this class belong the mistletoe and orchids, and such, of course, have a little of the green color.

To keep plants in a bedroom is not now considered especially advantageous, because it is known that they give off carbon dioxid in breathing and absorb some oxygen, as we do, even though we give off heat and they take it in.

The professor explained for us the starch grains, and showed us that they are encased in cells, the walls of which are composed of a somewhat woody fibre called cellulose. The spot from which the granule grows is called the hilum. A granule grows in the sense that it increases in size, but it is not living like a microbe, because it has neither ancestry nor progeny. The professor showed under the microscope several different starch grains.

POTATO STARCH.

TAPIOCA.

ARROWROOT.

CORNSTARCH

SAGO.

Give the classification of vegetables. Give examples.

Roots, tubers, bulbs, shoots, stalks, leaves, flowers, fruits, seeds, and fung The carrot is a root; the potato is a tuber; the onion is a bulb; asparagus is a shoot; celery is a stalk; lettuce is a leaf; cauliflower is a flower; tomato is a fruit; beans are seeds, and mushrooms are fungi.

To what family does the potato belong? What condiment belongs to the same family? The *Solanaceæ* or Nightshade family. Capsicum, or cayenne pepper, is a condiment belonging to the same family.

Give the chemical composition of potatoes. Water composes about seventy-five per cent. of a potato, the remainder being starch, albumin, fat, sugar, cellulose and saline matter, or silicates of lime, magnesia, potash and soda—citrates, phosphates and pectates, solanine and asparagin.

How are they affected by heat? Heat causes the starch grains to absorb their own moisture and in swelling burst their cell walls.

Which is the more healthful, baked or boiled potatoes? Baked potatoes are more wholesome, because they are drier, as the starch has absorbed its own moisture, and even a part of that has been lost by evaporation, and they have parted with none of the potash salts, which are soluble in water.

Why do old potatoes wilt after sprouting? Old potatoes wilt because they have parted with a portion of their starch and water, which has been used in the growth of the sprout.

Which are the more nutritious, old or new potatoes? Why? Old potatoes, because they are fully developed.

What is the nutritious principle of potatoes? Starch.

Why are potatoes heavy and sodden if not properly boiled? When the water is not hot enough to cause the starch grains to burst their cell walls by absorbing their own moisture in swelling, they are heavy, and sometimes potatoes after being boiled are allowed to stand and absorb the water in which they were boiled, which makes them sodden.

Is the juice of potatoes acid or alkaline? Acid.

Give the proper methods for cooking potatoes. Baking, steaming, and boiling.

In boiling potatoes should you use hard or soft water? Soft water. Why? Because it softens the cellulose.

Why are fried potatoes indigestible? Because the heat is so great as to toughen the outside cellulose, so the heat cannot properly cook the inside starch, and the fat has been partly changed into an irritating acid.

What are Jerusalem artichokes? Tubercles of *Helianthus tuberosus*—one of the sunflower family. They contain nitrogenous matter, cellulose, water, some sugar, fatty matter, pectic acid, pectine, mineral matter and inulin instead of starch.

Describe the methods of cooking them. Boiled and served with cream sauce. Parboiled and fried. Made into soup or hashes or pickled. Artichokes have no particular nutrition, but are eaten for waste, or to dulute more concentrated food.

Describe the chemical composition of beets; turnips; carrots; parsnips; salsify; horseradish. They are watery vegetables, good for waste, and all contain water, nitrogenous matter, starch, sugar, and salts or mineral matter. Carrots contain some iron. Horseradish contains a volatile sulphurized oil. Turnips contain iron and potash, while the beet is characterized by the large amount of alkali in combination with an organic acid. Parsnips and carrots contain some fat.

Give the proper methods of cooking each. Beets are boiled and served with cream sauce or pickled. Turnips are boiled and served with cream sauce or mashed. Carrots are stewed and served with cream sauce, pickled or used in soups. Parsnips are boiled, stewed, fried or made into fritters. Salsify is boiled, made into fritters or soup. Horseradish is used in sances or as a salad.

Do vegetables contain albumin and casein? Yes.

What is the difference between vegetable and animal abumin and casein? They are chemically the

same, but the vegetable casein is harder to digest than the animal casein.

Give the names of all vegetables containing casein. Peas, beans, lentils and chickpeas.

Give the chemical composition of the onion. Water, uncrystallizable sugar, gum, vegetable albumin, pectic and phosphoric acids, phosphate and carbonate of lime, iron, and a volatile oil containing sulphur.

Give the different varieties of onions, and the best methods of cooking each. Silver skins, red or brown skins, and yellow skins. They can be boiled, stewed or baked.

What are leeks? chives? garlic? They are different members of the *Allium* or Lily family.

Give the difference between a Spanish and an American onion. A real Spanish onion has a dark-brown skin and is large and mild flavored. Though as large onions are raised here we usually speak of the American onion as being of medium size and of a decided flavor.

How do you get onion juice? To get the juice from an onion, cut the onion across the layers into two equal parts and give the freshly cut surface a twisting movement while pressing it against a grater.

Of what vegetables do we eat the leaves? Cabbage, cress, lettuce, kale, endive, spinach, beets, turnips, chervil, mustard, chicory, dandelion, dock, sorrel, mint, chives, parsley, daisy, borage and peppergrass.

Give the chemical composition of each and the best methods of preparing them. Cabbage, mustard, kale, turnip tops, chives and peppergrass contain a sulphurized oil. Spinach contains nitre. Lettuce contains nitre and a principle that acts on the system like opium. Sorrel contains tartaric acid and superoxalate of potash. Cress contains an essential oil, but no sulphur combined with it. The sulphur is in another form. All contain water, albuminoids, starch, gum, leaf green, fat, cellulose, and mineral matter. Lettuce, cress, chervil, mustard, borage, peppergrass, turnip tops, endive, chives, and sorrel are used in salads,

while parsley and mint are used to flavor various dishes. Cabbage, kale, chicory, beet-tops, dandelion, spinach, daisy and dock leaves are boiled.

What is the difference between watercress and peppergrass? In appearance and manner of growth they are very different. They both contain an essential oil. In peppergrass sulphur is combined with the oil, but in the cress the sulphur is not so combined.

Of what vegetables do we eat the stalks? Rhubarb, celery, angelica. Artichoke and beet stalks are called chard.

Give the chemical composition of each and the best methods of preparing them. They contain water, cellulose, mineral matter, albumin, sugar, mucilage or gum. Stewing is the best method of preparing, though the stalks of angelica are often preserved and used as a garnish.

What is asparagus? Edible shoots of a sea plant, *Asparagus officinalis*, of the lily family.

Give its chemical composition and the best methods of preparing it. Water, cellulose, malic acid, asparagine and mineral matter. It is usually boiled or stewed and served with cream sauce.

Of what vegetables do we eat the flowers? Cauliflower, broccoli, French artichokes, hops and capers.

Give the best method of preparing each. Cauliflower, broccoli, French artichokes and hop buds are boiled and served with cream sauce. Capers are pickled.

Tomato Soup with Stock.—In preparing tomato soup with stock we put one quart of stewed tomatoes with one pint of stock in a saucepan and added one bay leaf, one sprig of parsley, and one small onion cut in slices. When it had stewed fifteen minutes we pressed it through a sieve that was fine enough to keep out all the seeds. We put the tomato liquid in a clean saucepan and allowed it to boil. We rubbed one tablespoonful of butter with three level tablespoonfuls of cornstarch or flour, and when smooth added it to the

boiling soup and did not stop stirring until it was all smooth. We added one teaspoonful of sugar, and after mixing one teaspoonful of salt with one-fourth of a teaspoonful of pepper also added it to the soup. We then added one-fourth of a teaspoonful of baking soda and the soup was ready to be served at once with croutons.

Croutons.—We made the croutons by cutting stale bread into thin slices and spreading them lightly with butter, which we rubbed in. After removing the crusts we cut the slices into dice-shaped blocks and toasted them a golden brown by placing them in a moderate oven. Croutons are good served with any thick soup.

Tomato Soup without Stock.—In making tomato soup without stock we took one quart can of tomatoes —one quart of freshly stewed tomatoes would do as well. The very first thing we did was to cut one-fourth of a pound of ham into dice and to pan it with one onion cut into slices. When brown we put the ham and onion in a large saucepan, or small soup kettle, and added one quart of water, one bay leaf, one stalk of celery and one carrot, peeled and cut in slices. We allowed it to simmer for one hour and then added the tomatoes and let it simmer forty-five minutes longer. At the end of that time we pressed the tomatoes through a sieve and returned the soup to the fire. We rubbed two ounces of butter with four rounding tablespoonfuls of flour until smooth and added it to the boiling soup, stirring until smooth and the soup boiled again. We added one teaspoonful of salt, mixed with one-fourth of a teaspoonful of pepper, and the soup was ready to be served with croutons.

Turkish Soup.—In preparing Turkish soup we added one-fourth of a cup of rice that had been looked over, and well rubbed in a dry cloth, to one quart of stock and allowed them to boil together for twenty minutes, then we pressed them through a sieve and put it on again to heat. We beat the yolks of two eggs together and added one tablespoonful of cream. We

added the eggs and cream to the rice and stirred it for about two minutes, but were very particular not to allow it to boil. We added one-half teaspoonful of salt and one-eighth of a teaspoonful of pepper and the soup was ready to be served. This soup is considered very good for lunch.

A Clear Vegetable Soup.—In preparing a clear vegetable soup we put one quart of boiling water in the soup kettle and added one small carrot and one turnip. We had peeled and cut all the vegetables with fancy shaped tin cutters so the pieces would be of one size and there would be no small pieces to dissolve and cloud the soup. When the carrot and turnip had boiled one hour, we added one sweet potato and one white potato cut in fancy shape, one cupful of peas, one cupful of beans, one tomato, one ear of corn and one tablespoonful of rice or barley. When all had boiled until tender we added two quarts of stock and salt and pepper to taste. We let it boil up once and it was ready to be served.

Black Bean Soup.—In preparing black bean soup we washed one pint of turtle beans in cold water and left them to soak until morning. We poured off the water in which they had soaked and covered them with one quart of boiling water. When they had boiled until tender (about two hours), we added one quart of stock and one pint of boiling water. We pressed all through a sieve and put it in a clean kettle, and when it boiled we added salt and pepper to taste, and thickened it with one ounce of butter and one tablespoonful of flour rubbed together. We sliced two hard-boiled eggs and one lemon, which we placed in a tureen and poured the boiling soup over them. It was then served immediately.

When wine is used, one gill of sherry is put in the tureen with the eggs and lemon before the soup is added.

Cream of Potato Soup.—In making a cream of potato soup, after peeling four good sized potatoes we put them on to boil in one-quart of cold water. When

half-done—in about fifteen minutes—we poured off that water, and covered them with one pint of fresh boiling water, and added one bay leaf, one piece of onion as large as a silver quarter, one sprig of parsley and one stalk of celery, and boiled them until the potatoes were done; then we run them through a vegetable press or sieve. We had put one quart of milk on in a farina boiler and had rubbed two tablespoonfuls of flour with one of butter until smooth. When the milk was steaming hot we added the butter and flour and stirred until it thickened. We poured the thickened milk over the potatoes, added salt and pepper to taste and stirred until all was smooth.

This soup was served at once, as it is not nice warmed over.

Your affectionate cousin,

VIRGINIA REED.

LETTER XII.

December 20, 189–.

My Dear Cousin Alethea: The title of the next lecture was "Digestion of Starch."

In connection with starch we begin the study of digestion. Starch is in plants in a granular form, and this form is different in each plant, so far as the different plants have been examined. Our common grains require very careful work to find the difference.

Starch grains do not change their form if left in cold water, but will rot if they are in it long enough. If we boil the starch it becomes clear, and in its finer forms we have food. In this form it will digest. Starch never dissolves. Starch in itself is not taken up by the blood. It has to be prepared and changed by the alkaline secretions before it can be assimilated. Starch is really the food supply of plants. Potato plants would not be so plentiful if they were not valuable as food. There is an agricultural ant in Texas that cultivates grain.

The reason for cooking starch is that by so doing the granule is broken up and is more easily used by our system. Raw meat, however, is more readily digested than cooked. Whether the cell wall of starch is a woody fibre or only of material like the starch condensed, it must be broken down before our systems can use the starch.

All bacteria have forms, and are recognizable and capable of being described; their walls are of woody fibre, but their contents are living and they beget their kind. The cells of starch do not possess life. Ferments are of two classes, organized and non-organized. Bacteria belong to the organized class, and though living,

having infancy, maturity and old age, we do not know that they are conscious. In the lowest orders of life it is hard to tell where consciousness ceases. The non-organized class of ferments are without body and have no history like the bacteria. We can grow bacteria, but we cannot grow the non-organized ferments. Non-organized ferments are called enzymes or zymoses. *Ase* is the termination used to designate this class of ferments. Enzymes are found in both vegetables and animals.

Diastase is the ferment found in malt. Synaptase is that found in the almond, wild cherry, apple, pear, peach and prune, in the Rose family.

Pepsin is the ferment found in the stomach, while ptyalin is the one found in the mouth. Invertase is the ferment of yeast. Amylopsin is one of the three ferments found in the secretion of the pancreas, and acts upon starch. All of them change certain substances, and this change depends very much upon the taking up of water. Sullivan found that one part of invertase would act upon one hundred thousand grains of cane sugar and still be active. This dilutes, hence if we could remove the particles from the solution as formed it would probably go on forever. This involves the use of water. The ferment brings the substance acted upon and the water into such close contact that they unite or fuse together.

The professor performed the experiment of converting starch, that had been cooked, into sugar by the aid of pancreatic extract. The ferment, after causing certain portions of starch to unite so intimately with the water that the starch breaks down and forms sugar, leaves these portions and treats others in the same way till the whole mass is converted into sugar. This same process goes on in us, and when this sugar is formed the system is ready to absorb it. The sugar of milk seems to be the only sugar that enters the stomach that is ready at once to be assimilated. *Ose* is the termination used to indicate sugar. Maltose is a sugar formed from starch by a ferment, while dextrose is a sugar formed by an acid.

The test for boiled starch is iodine. The same test applied to maltose gives a momentary purplish tinge, on account of the dextrin present, and then shows a rich red wine color, which soon fades out, while the purple tint, or color rather, of the iodine on the starch does not fade out. Starch with sulphuric acid makes a different kind of sugar from that made with a ferment.

Microbes, by secretion, produce ferments foreign to our bodies, and doubtless are the cause of many diseases, because our systems have not the power to expel these poisons.

Of what vegetables do we eat the fruit? Tomato, melon, okra, egg plant, martynia, cucumber, pumpkin, vegetable marrow, and squash.

Give their chemical composition and the best methods of preparing each. They are mostly made up of water and cellulose, with some sugar, mucilage, or gum, albumin and mineral matter. Tomatoes contain malic and citric acids and calomel, and also some solanine. The egg plant contains solanine. Tomatoes, pumpkins, vegetable marrow and squash are stewed or baked. Okra is made into soup, stewed or pickled. Egg plant is fried and baked. Martynias and cucumbers are pickled. Melons are usually eaten uncooked, but are sometimes made into preserves or spiced pickles.

What is sauerkraut? Cabbage that has been cut up and placed in layers with salt between them and kept under pressure until it has fermented. It is cooked in its own liquor.

What are chick peas? Chick peas are seeds of the *Cicer arietinum*, which are used mostly in Asia and Southern Europe. They are the smallest peas that grow and are cooked pods and all.

What are lentils? Lentils are the seeds of the *Ervum lens*, and were known to the Hebrews in early times. They are between a pea and a bean in appearance.

What are Brussels sprouts? Little cabbages grow-

ing from the axils of the leaves on a variety of the cabbage family or *Brassica.*

What is kohl-rabi? Turnip-rooted cabbage.

What are mushrooms? Truffles? Morels? How can you distinguish the poisonous from the edible ones? Mushrooms are fungi. Truffles are underground fungi. Morels are an umbrella-shaped fungi. The poisonous mushrooms have an acrid taste, and if there should exude juice or milk when the mushroom is cut it is poisonous.

What vegetable is more capable of sustaining life, weight for weight, than any other kind of food? Chick peas.

Of what vegetables do we eat the seeds? Peas, beans and lentils.

Give the chemical composition of each and the best methods of preparing them. They are composed of water, vegetable casein, fat, mineral matter, cellulose, starch mingled with legumen. They are best boiled and are also made into soup.

From what is oil produced? Oil is produced from vegetables and animals.

Is there any difference between vegetable and animal oil? If so, what is it? Animal and vegetable oils are chemically the same. Butter is the most easily digested of all known fats or oils. After butter the vegetable oils are more easily digested than any of the animal oils excepting cod-liver oil.

What is the difference between oil and fat? Fat contains stearin, palmitin and olein, while oil contains only palmitin and olein. The stearin causes fat to solidify more easily than oil.

What is the difference between a fixed and a volatile oil? A volatile oil evaporates, but a fixed oil remains wherever placed.

What vegetables produce the most oil? Palm nut, olives, Brazil nuts, almonds, and peanuts. Of vegetables proper, lentils, peas and beans contain the most, though fresh Scotch oatmeal and maize or corn contain more than the vegetables and less than the nuts.

What animals produce the most oil? Hog, bear and opossum.

How do oils differ from other alimentary principles? They contain less oxygen and more carbon.

Do oils produce muscle or heat? Heat.

What is said of the digestibility of oil? It is hard to digest.

What vegetables contain volatile oils? Onions, celery, turnips, radishes, horseradish, watercress, and all the cabbage family.

Describe the wheat grain. Give its chemical composition and the processes of making it into flour. The grain of winter wheat is long and pointed, while the grain of spring wheat is plump and round at the ends. The wheat grain is composed of water, albuminoids, chiefly fibrin and glutin, starch with a trace of dextrin, fat, cellulose, lignose, and mineral matter. There are several modes of milling or grinding wheat, differing mainly in the preponderance of one or other of the two actions of squeezing and cracking. By alternations in the distance between the stones or steel rollers, and by differences in the modes of scoring them, as well as in their direction and rate of motion, mill-products of different qualities are obtainable. Grain in "high-milling" is submitted to many re-grindings and boltings.

How may the quality of flour be determined? By making a paste of the flour with water. If the paste is very elastic and snaps with a noise the flour is good, because it contains a great deal of gluten.

What is the indigestible portion of the wheat grain? Why? The outer covering, or bran, because it contains silica in such a flinty form that we cannot digest it.

What articles of food are made from the glutinous part of wheat? Macaroni, spighetti, vermicelli, and bread.

How does heat affect the starch cells of wheat? Heat causes the starch grains to swell and burst their cell walls, thereby making them more easy of digestion.

What causes the variations in flour? The difference in the growing of the wheat, the different processes of milling, and the length of time the flour has been kept.

Why is fine flour white and whole flour dark? Fine flour is mostly starch, which is white, while whole flour contains all the elements of the grain excepting the outer husk. The gluten and cerealin, a principle which resembles diastase in being endowed with the power of converting starch into sugar, contribute very much to making the color darker.

How does age affect flour? Flour becomes whiter with age, and the more gluten it contains the sooner it spoils. The spoiling is caused by the cerealin in the gluten changing the starch into sugar, and if the heat is sufficient the sugar is changed into alcohol and then into vinegar. Flour should be kept cool and dry.

BAKED RIB OF BEEF WITH YORKSHIRE PUDDING.—In baking a rib of beef we removed the ribs, rolled the meat, fastened it securely with a string, and placed it in a baking pan. We dredged it lightly with pepper, and adding one teaspoonful of salt to one-third of a cup of boiling water, poured it into the pan. We basted it every ten minutes and baked it fifteen minutes to the pound. One hour before the meat was done we poured off nearly all the drippings from the meat into another pan and poured into it the pudding, made by beating three eggs, unseparated, until light and adding to them one pint of milk. We put six large tablespoonfuls of flour in a bowl and added gradually the milk and eggs, beating until smooth. We poured this pudding through a fine sieve into the pan of drippings, added one-half teaspoonful of salt and two dashes of pepper, then baked the pudding one hour and cut it into squares and served it around the meat.

POT ROAST OF BEEF.—In making a pot roast of beef we trimmed and fastened securely into shape a brisket of beef and placed it in a heated kettle over the fire. When one side browned we turned it

and browned another. When the surface had been browned, we added one pint of boiling water, and putting a cover on the kettle left the meat to cook slowly fifteen minutes to every pound. We added one teaspoonful of salt when the meat was half done. We did not add any more water, because when that pint had evaporated there was enough fat rendered out to keep the meat from burning while it finished cooking. We made a brown sauce to serve with the meat.

Brown Sauce.—In making the brown sauce we removed all the drippings from the kettle excepting two tablespoonfuls. We added two tablespoonfuls of flour to the drippings in the kettle and mixed the two together until smooth and a dark-brown color. We then added one pint of stock, though hot water would do, and stirred until it boiled; we seasoned this sauce with one teaspoonful of salt and one-fourth teaspoonful of pepper. We strained the sauce through a fine sieve, and it was ready to be served.

Meat drippings should always be saved and clarified, and then they can be used in frying.

Boiled Fish.—In preparing to boil a fish we first washed it well in cold water, and having wiped it dry we rubbed in a little salt. We then took a piece of cheesecloth large enough to cover the fish, and having put it around the fish, sewed the edges together so there would be but one thickness over the fish. We then put it in a fish kettle, covered it with boiling water, added one tablespoonful of salt and left it to simmer gently ten minutes to every pound. We took the fish from the water as soon as done, and having drained it, removed the cloth very carefully and turned it on to the platter. We garnished it with parsley and slices of lemon, and made a cream sauce to serve with it.

This is the rule for boiling all kinds of fresh fish. When a fish kettle is not at hand tie the fish to a platter to keep it from being broken during the cooking, and place it in a large saucepan or other kettle.

Cold boiled fish can be used in making salads, croquettes or à la crêmes.

CREAM SAUCE.—The cream sauce for fish is made in the same proportion as for boiled onions, and can be kept for a *short* time, if the saucepan containing it is placed in a vessel of hot water. It must be stirred occasionally to keep a crust from forming on the top.

Your affectionate cousin,
VIRGINIA REED.

LETTER XIII.

December 22, 189–.

My Dear Cousin Alethea: The next lecture in the order in which they were delivered had for its title "Starches and Ferments."

Freezing interferes with the action of ferments, but boiling kills them outright. Ferments do not have life like microbes. By chemicals we can produce changes analagous to those caused by ferments. One hundred degrees Fahrenheit has been found to be the best temperature for the actions of ferments. Liquids, by being either acid or alkaline, can control the action of ferments. For instance, pepsin acts in an acid, while the pancreatic secretion acts in an alkaline medium. We could control ferments by many other substances, only they are unfit for food, being poisons. Many, however, in single action have no recognizable influence.

Those substances which when put in food have no immediate ill-effects on our systems and yet have a restraining influence on the actions of ferments, are called antiseptic or antizymotic, because they act against the ferments. The two words, to be exact, have a slight difference in meaning. Cold is an agent often employed to preserve the flavor of an article for a long time and, on account of keeping the flavor, is preferred to heat. Heat changes the flavor though it prevents the action of ferments.

Modern discovery has taught us that creosote destroys microbes. Smoke has been used from early times as a preservative. It is the creosote in the smoke that gives it its antiseptic property.

Drying is also resorted to, to prevent microbes from

making their ferments, because a microbe to flourish must have moisture.

Salt is fairly active as a microbe killer. Saltpeter is also used. Sulphuric acid is an excellent killer of microbes, but being so poisonous we cannot use it on food or it would kill us too. Salicylic acid is another powerful antiseptic. It does not kill the microbe, but it holds it in check. Borax and boric acid also act as restraining agents.

Sulphur fumes, oxide of sulphur, kills microbes. Certain compounds are used, but being fixed solids, sulphites, they are not so active as the fumes. To review, sulphite of lime, sulphite of soda and smoke are antiseptic.

Cold, salicylic acid, borax, boric acid, sulphites and drying are restraining agents.

By being subjected to long-continued action of cold they might die, but boiling water is the best killer of the microbe and its action, and is the most rapid way to destroy them, except by poisons.

By certain strong acids, sulphuric for instance, starch is made into glucose, a sugar not the same as that made by the stomach, for that is maltose. The *ose* or sugar and starch group are characterized by strong likeness, and are essential in their nature to alcohol. They are complex, yet none contain nitrogen, so cannot form tissue, and by themselves cannot sustain life. They are, however, very susceptible to the action of microbes.

It is generally the palate and not our systems that call for the sweets. They contain the three elements, carbon, hydrogen and oxygen. The hydrogen and oxygen are in the same proportion to each other as in water—two of hydrogen to one of oxygen. It is not water in sugar, but in the amount to form water.

The starches when converted into sugars form three groups—the Amyloses, the Sucroses and the Glucoses. To the first group belong starch and dextrin, having the same composition but different arrangement. To the second group belong cane sugar or sucrose, lactose,

maltose and tuofikose. To the third group belong dextrose and levulose. The first and second groups can be changed to the third, but the third cannot be changed to either the first or the second.

We tasted saccharine, a substitute for sugar made from coal-tar. One grain of it is said to produce as much sweetness as three hundred grains of cane sugar. I did not like it. It was too sweet.

What is farina? Farina is a granulated form of the inner portion of the finest wheat grain.

Give the best method of making white bread. Scald one pint of sweet milk and pour it into a mixing bowl containing two teaspoonfuls of sugar, one teaspoonful of butter and one teaspoonful of salt. When the milk is lukewarm, add one cake of compressed yeast dissolved in two tablespoonfuls of lukewarm water, or one-half cup of liquid yeast, and sufficient flour to make a thick batter. Beat thoroughly, stand the bowl in a bread raiser partly filled with warm water, put on the cover, let it stand until the batter is light, and then add flour enough to enable you to knead the dough until it is smooth and elastic, and does not stick to the hands or board. Be careful not to use too much flour, as that would make the bread hard and dry. Put it back in the bowl and that in the bread raiser until it becomes light and doubles its bulk. Turn the dough out on the pastry board, and having divided the dough, mould it lightly into loaves and place the loaves in well-greased pans. Having stood the pans in a warm place until the loaves are light, bake them in a moderately quick oven for three-quarters of an hour. The length of time required for the baking depends somewhat on the size of the loaf. A Vienna loaf requires thirty minutes while a square loaf requires one hour.

What constitutes the perfect loaf? A loaf to be perfect must be elastic and have no odor of the yeast. It must be raised uniformly without any large cavities, and while the shape of the loaf is symmetrical, it must be completely baked without overbaking the outside, and it must have a sweet taste.

Besides good flour and water, or milk, what other element is necessary for bread? Yeast or salt.

What is yeast? Yeast is a plant of the fungus family. It partakes of the nature of an animal in that it changes the elements before feeding on them.

Give the best method of making yeast, and keeping it. Pare four good-sized potatoes, grate them, and put them as soon as grated into one quart of boiling water, and stir over the fire for five minutes. Remove from the stove and add one-half cupful of sugar and two tablespoonfuls of salt. When lukewarm add one cupful of good yeast. Cover and let it ferment for three or four hours. After stirring it down, cover closely, or bottle it and keep it in a cold place, but not where it could freeze.

Why do you use potatoes for yeast? Because the potatoes are peculiarly adapted to aid the growth of the yeast plant.

To increase the growth of yeast, must you scald or freeze it? If so, why? Do neither, or you will kill the yeast plant.

Can any other ferments be used in making bread? If so, describe them. Leaven, which is dough that has soured, and salt added to a batter of flour and water and kept warm until decomposition begins.

Give a recipe for salt-rising bread. To one pint of scalding water and one-half teaspoonful of salt add enough flour to make a thick batter, which must be beaten until smooth and full of air-bubbles. Cover closely after placing the bowl in the bread raiser partly filled with warm water. Keep in a warm place several hours, or over night. When the batter is very light scald one pint of milk, and when it is lukewarm add one teaspoonful of salt and enough flour to make a batter that will drop, not pour. Into this batter pour the one that has grown so light. Beat thoroughly for three minutes and stand it again in the closely covered bread raiser until light, which will be in about two hours. When light add flour enough to make a dough, which must be kneaded until smooth and

elastic. Divide it into loaves, and having moulded them, place them in well-greased pans. Cover closely, and when light bake them one hour in a moderate oven (360° Fahr.).

What is leaven? Dough which has been allowed to ferment and turn sour when used to start fermentation in other dough is called leaven.

Why does bread made with leaven have an acid flavor? The acid flavor is partly caused by the acid of the leaven itself and partly by the sour or lactic fermentation which it induces in the dough.

Which is the best and most healthy ferment for daily bread? High yeast; that is, yeast of quick growth.

In what temperature should the sponge be kept? From 68° to 72° Fahr.

Why must it be thoroughly beaten? To make the gluten elastic and the dough white.

About what amount of liquid will moisten four quarts of flour? About two quarts for whole wheat flour, and about three pints for spring wheat flour as now milled. About one quart for winter wheat flour and about two and two-thirds quarts for gluten flour.

What may be added to make it hold more water? Boiled rice, potatoes and salt.

Why is dough elastic? The elasticity of dough is caused by the tenacity of the gluten.

Why do we knead bread? Describe the whole process. The purpose of kneading is to intermingle the water with the flour so as to combine with and hydrate the starch, to dissolve the sugar and albumin, and to moisten the minute particles of dry gluten, so as to cause them to cement together and thus bind the whole into a coherent mass.

Why are the hands the best instruments for this purpose? The hands are best because by them you can tell when all the lumps have been removed.

How do you know when to cease kneading? When you can knead it on an unfloured dry board without its sticking, and it feels perfectly smooth.

What makes the dough rise? The liberation of a gas throughout the glutenous dough.

What is moulding? Moulding is the shaping of the dough into forms for baking.

How can you tell when bread is ready for baking? Bread is ready to be baked when it has doubled its bulk and feels light.

At what temperature should the oven be? At about 360° Fahr. when the bread goes in. It is the moderate heat before browning that gives a soft crust.

How can an oven be tested without a thermometer? The baker's method is to throw flour on the floor of the oven—if it browns quickly without burning the heat is right.

How long should bread be baked? A Vienna loaf requires thirty minutes and a square loaf requires one hour.

What is the difference between the crust and the crumb, and what causes the difference? The crumb is cooked by aqueous vapor, the temperature not rising above 212°. The crust is baked by the heat of the oven falling upon the surface of the loaf, causing first the rapid evaporation of its water and then producing a disorganization of the dough. The starch grains are ruptured and some of them are converted into dextrin and sugar, and if the heat is too intense the sugar is changed into caramel, which is bitter.

How do you determine when the bread is done? Bread properly baked when rapped on the bottom should sound hollow, should not tick loudly, and should feel light.

Why should bread be exposed to the air after it is removed from the baking pans? So that it would cool off quickly. The brown products of the roasting process attract moisture, so that the crust becomes softer.

How should bread be cared for after it becomes cold? It should be placed in a dry tin box, free from crumbs and stale bread. It should not be covered with a cloth or paper, but should have the box closed by its own tin lid.

Why does fermentation take place more quickly in brown bread than in white? It is on account of the presence of the cerealin, or the natural ferment of the wheat, being present.

Trussing and Baking Poultry.—The poultry sold in the market here has been bled to death and has had the feathers removed. In trussing and baking poultry the first thing we did was to singe the fowl by holding and turning it over a small alcohol lamp, then we placed it on a thick board, and with one stroke of a cleaver cut off the head. We placed the fowl on its back, with the feet toward us, carefully cut the skin at the first joint, and with a skewer pulled out the tendons found above the joint, and then separated the bones by pressing the feet down and back. By so doing a sheath containing several tendons is exposed to view. This sheath we carefully cut through and drew out the tendons. In drawing the tendons, hold the leg with the left hand, pressing it back toward the body, and having slipped the skewer under the tendon pull it out with the right hand. When done we had ten shining white tendons dangling from each foot. We then grasped the fowl firmly by the skin of the neck with the left hand, and with the right cut the skin down, lengthwise, the back of the neck. We separated the skin from the neck, drew it down over the breast, and took out the crop without breaking it. We placed the fowl again on the thick block and cut the neck off close to the body. We did not cut off any more of the skin, because we wanted the skin to cover the place where the neck had been, and so keep the dressing in. We cut a vent under the rump large enough to draw out all the entrails. We slipped one finger in at the neck opening and at the vent just made, carefully detached the entrails from the bony framework, and, taking hold of the gizzard with the thumb and two fingers, we drew out all the internal organs without breaking any of them. We cut around the outer opening of the intestine, removed the oil

sack from the top of the rump, and the drawing was complete. We wiped the fowl inside and out with a dampened towel, and it was ready to use.

We were going to stuff the chicken, so we took one cupful of stale breadcrumbs, one tablespoonful of melted butter, one tablespoonful of chopped parsley, and salt and pepper to taste. We filled the space from which the crop was taken, folded the skin over, and fastened it to the back of the chicken with a trussing needle, and having put the remainder of the stuffing in the body of the chicken, we sewed up the vent. We placed the chicken on its back with the neck away from us; pushed the legs up under the skin, crossed them and fastened them with a stitch to the bone of the rump; turned the wings back, run the trussing needle through them and the body of the chicken and tied the cord, and then through the legs at the second joint and tied it tightly in order to keep the legs close to the body. We put two slices of bacon in the bottom of a baking pan, placed the chicken on them, and poured into the pan one-half cup of water containing one teaspoonful of salt. We baked it in a quick oven fifteen minutes to every pound, basting it every ten minutes, at first with the water and then with its own drippings. Fifteen minutes before it was done we basted the breast with butter and dredged it with flour. When done we removed the strings, placed the chicken on a heated platter and garnished it with parsley.

GIBLET SAUCE.—We made a sauce from the giblets to serve with the chicken. The giblets consist of the neck, heart, liver, and gizzard. We cut the heart open in order to remove the clotted blood, cut off the outer coat of the gizzard and left the inner lining containing the sand unbroken to be thrown away, and cut the liver away from the gall-bag. We put the giblets, covered with cold water, over a moderate fire and left them to simmer while the chicken was being roasted. We added one tablespoonful of flour to the drippings in the pan in which the chicken was roasted, and

stirred it until brown, then added one cup of the liquid in which the giblets were boiled, stirring continuously until it boiled. We added the giblets chopped fine, and one-half teaspoonful of salt and one-eighth teaspoonful of pepper, and it was ready to be poured into a boat and served.

STEWED CHICKEN.—In preparing a chicken for stewing we drew it as for baking and then cut it into eleven pieces. We took the legs from the body, separated them at the second joint, and then removed the wings. We cut through the ribs on each side, unjointed the back from the breast, and cut the breast in two pieces lengthwise; unjointed the back and cut the lower back into two pieces; put the chicken in a stewpan, partly covered it with boiling water and left it to simmer until tender—from two to two and one-half hours if old, or about one hour and a quarter if young. When about half done we added one teaspoonful of salt. When done we removed it to a heated dish, placing the neck piece, heart, liver and gizzard with the pieces of the back in the center of the dish, and the two pieces of the breast on top of them. We placed the second joints on one side of the plate, and the legs crossed on the other, with a wing at each end of the platter. We poured over all a sauce made by moistening two tablespoonfuls of flour with a little cold water and then stirring it into the liquid in which the chicken had been boiled. We stirred constantly until it boiled and then added one-fourth of a pint of cream and salt and pepper to taste. We removed it from the fire, added the beaten yolk of one egg and poured the sauce over the chicken, which was ready to be served at once.

Your affectionate cousin,
VIRGINIA REED.

LETTER XIV.

December 27, 189–.

My Dear Cousin Alethea: I returned yesterday from a pleasant visit with the married member of our class. Some weeks ago she invited me to visit her as soon as school was out and stay until after Christmas. I had been dreading vacation and wondering what to do during the *two* whole *weeks*, so you may know the invitation was gladly accepted. Her home is about twenty minutes' ride by steam from the city. She lives in a large, quaint-looking house built of stone. The view is fine, and to the west the ground slopes down to a thickly wooded ravine. I had the pleasure of helping decorate the Christmas-tree for the children. She has four—two boys and two girls—very lovable children. Her mother and others also were there. Seeing so many around, and the colored servants moving about so quietly, made me think of the many changes that have come to us since the days when we were little children.

In coming back I could not help feeling thankful that I had more notes to write out for you, because it is so decidedly lonesome staying in a large city without having something special that you can do.

The professor spoke next about the nature of sugars, and their relation to each other, and also about the relation between starch and sugar. Sugars and starches are divided into three sub-groups: Amyloses, Glucoses and Saccharoses.

Starch is readily converted into sugar, either by a ferment or by a dilute acid, but the sugar formed by a ferment acting on the starch is called maltose, while that formed by the dilute acid is called glucose. The two belong to different groups.

By heat, starch is converted into dextrin. This is the variety of gum used on postage stamps and envelopes.

The change of cane sugar to glucose is accompanied by the taking up of water, which is caused by the ferment acting as an intermediate body between the two. Maltose is formed by two particles of starch taking up one of water. Glucose is formed by starch ($C_6H_{10}O_5$) taking up one of water (H_2O).

Maltose and cane sugar have antiseptic properties, because they make such a thick syrup microbes cannot get in it, as has been tested by the preserving of fruits. A dilute syrup after a while gives off gas, and has alcohol in it, and by adding yeast you could increase their formation. We usually call the formation of gas and alcohol, fermentation; there are, however, several steps in the change. When yeast is added to cane sugar, the cane sugar does not directly furnish the alcohol and gas.

In mead, root beer and spruce beer there is from one-half to two per cent. of alcohol. That made at home is usually made just to have a sparkling drink—the gas gives that effect.

Yeast is not a microbe, but belongs to the fungus family of vegetable life. Yeast requires air, moisture and a warm temperature to increase rapidly. Yeast secretes a ferment, analagous to the ptyalin of the mouth, called invertase.

One grain of invertase has the power to change one hundred thousand grains of cane sugar into two kinds of glucose which are in equal parts. When ninety-five pounds of cane sugar take up five pounds of water there would be fifty pounds dextrose and fifty pounds of levulose in the one hundred pounds of glucose.

When a solution of sugar is seen through tourmaline lens it sometimes requires the lens to be twisted to the right and sometimes to the left in order to see plainly. Those that require the lens to rotate to the

right are called right-handed sugars, and are marked +, while those which cause the rotation to be made in the opposite direction are called left-handed sugars and are marked —.

In glucose formed from cane sugar there is a right-handed and a left-handed sugar, as the names dextrose and levulose indicate. Levulose is sweeter than dextrose. The left-handed sugar has greater power to twist or rotate the rays of the polarized light than the right-handed sugar, taking ounce for ounce, so, instead of the + neutralizing the effect of the —, the rays of light are rotated somewhat to the left, and the sugar is called an inverted sugar. It is from this fact that the ferment which causes this is called invertase.

We derive no levulose from starch, and cane sugar must be decomposed before it is formed from it. Cane sugar and starch both have to be digested before they can be assimilated either by us or by animals. The professor could not say that glucose is wholesome, but thought it stood in the same relation to sugar that slate does to coal.

Commercial glucose made from starch by a dilute acid contains as much dextrin as dextrose, and also some water, but no levulose.

As soon as dextrose and levulose are made by yeast, it begins to feed upon them, and produces alcohol and carbon dioxid. The action is similar to that in our systems. We throw them out through our lungs.

When cane sugar is changed by dilute acid into dextrose and levulose its action stops.

When yeast has converted cane sugar into dextrose and levulose, it proceeds to feed upon them, unless stopped by a mild antiseptic, such as thymol. There is no known ferment that acts upon lactose or sugar of milk. It can be absorbed at once and is the only thing that should be added to condensed milk. Condensing milk changes all the elements in the milk.

One of our teachers said she had found Howell's condensed milk to be the best of all she had tried. She also said that a doctor told her more stomachs had been ruined by glucose than by rum.

What is rye? Describe the grain, and give its chemical composition. Rye is *Secale cereale*, one of the *Gramineæ* or grass family. The grain is smaller and thinner than wheat. Rye is composed of water, fibrin, gluten, albumin, starch, gum, fatty matter, sugar, cellulose and mineral matter.

How may its quality be compared with that of wheat? Rye ranks next to wheat. It contains more mineral matter than wheat, and its gluten is more nearly like that of wheat than any of the other grains.

Give the proper method of making rye bread. Set a sponge with one pint of scalded milk, one teaspoonful of salt, one teaspoonful of butter, one cake of compressed yeast, or one-half cup of liquid yeast, and wheat flour enough to make a thick batter. When the sponge is light add rye flour to make a *soft* dough. Knead gently and mould into two loaves; put them into greased pans, and when light bake one hour in a moderate oven. Rye does not require the dough to be made up so stiff as for white bread, neither does it require so much kneading.

Why is the method so entirely different from that of wheat bread? Because the nitrogenous principle of rye is not so tenacious as the gluten of wheat.

What is corn? Name the different kinds, and give their chemical composition. Corn is *Zea Mays* of the family of grasses. The different kinds are white, yellow, Egyptian or Mexican, red and popcorn. The yellow grows in the North, and contains more oil and nitrogenous matter than the white, which grows in the South. All contain water, starch, dextrin, fatty matter, cellulose, nitrogenous and mineral matter.

Give best methods of preparing green corn. After removing the husks and silk place in boiling water, and after the water boils again, boil rapidly for five minutes. Serve immediately; or, after removing the outer green husks, place in boiling water, and after it begins to boil, boil rapidly for ten minutes. Drain,

and after pulling the silk from the end of the cob, serve in the husks.

Why will corn meal not make loaf bread? Because it lacks the tenacious principle of the gluten.

What is samp? Hominy? Hominy is the whole grain of corn divested of its skin and germinal eye. Samp is hominy that has been broken up.

How are they prepared? The grain is deprived of its hull and germinal eye by being soaked in an alkali and then washed thoroughly to remove all taste of the alkali.

Why does corn meal spoil quickly? Because the excessive amount of oily matter which it contains has such an attraction for the oxygen of the air.

What is the difference between white and yellow corn meal? The yellow meal contains more oily and nitrogenous matter than the white.

Give recipe and example for a good corn bread. Louisiana corn bread is excellent. It is made of one and one-half cups of corn meal, one and one-half cups of corn flour, one-half cup of sugar, two teaspoonfuls of baking powder, one-half teaspoonful of salt, two eggs, one tablespoonful of butter, and enough sweet milk to make a thin batter. It is baked in a shallow pan for thirty minutes.

What is mush? Give recipe for making it. Mush is a porridge made from maize meal. It is made by stirring meal into boiling salted water until the meal floats. Stir it well and remove the vessel to that part of the stove where its contents will simmer for two hours. Do not stir again or it will stick.

Describe the oats grain, and give its chemical composition. The oat grain is the longest and slimmest of any of the cereals. It contains water, starch, gum, oil, cellulose and mineral matter, and also a nitrogenous principle allied to casein, called avenin.

How does it compare in point of nutritive value with other grains. It is highly nutritive. Some regard it as more nutritive than wheat; others place it next to wheat, because the wheat is so much more easily digested.

Give recipe for oatmeal mush. To boiling salted water add one-sixth as much oatmeal as there is water and let it boil for two hours, though simmering in a farina boiler for twenty-four hours improves it.

What is groats? When the oat grain is deprived of its outer husk and cuticle it is called groats. When these are crushed or broken they are called Embden groats.

Describe the rice grain and give its chemical composition. It is not so long and slim as oats nor so short and plump as wheat. It contains starch, sugar, gum, fatty matter, nitrogenous and mineral matter, lignin, cellulose and water.

What is said of its digestibility? It is easy to digest because it contains such a small amount of cellulose. Plain boiled rice digests in one hour.

What is the proper method of boiling it? Sprinkle the rice into rapidly boiling soft water. Keep the water boiling rapidly for twenty minutes. Drain the rice in a colander and stand it in the oven to dry.

What is barley? Pearl barley? Barley is *Hordeum vulgare* of the family of grasses. The grain is shorter and broader than wheat. Pearl barley is the grain deprived of the husk and rounded and polished by attrition.

For what is pearl barley generally used? In gruels and soups and in making barley water for the sick. It is particularly valuable on account of its diastase in preparing predigested food, in malt, or as an aid to our digestion.

Describe the buckwheat grain, and give its chemical composition. Each grain has three faces, and each face is triangular. It belongs to the *Polygonaceæ*, or buckwheat family, and its name means beech wheat. It contains starch, gum, sugar, fatty matter, cellulose, mineral and nitrogenous matter and water.

Give the proper method for making buckwheat cakes. Add one teaspoonful of salt and three and three-quarters cups of buckwheat to one quart of cold water in a stone jar; beat until smooth; then add one-

half cake of compressed yeast dissolved in two tablespoonfuls of lukewarm water. Mix well and cover the jar closely and stand it where it will keep moderately warm until morning. In the morning improve the flavor by adding one-half teaspoonful of soda or saleratus dissolved in two tablespoonfuls of boiling water. Beat thoroughly and bake on a hot griddle. One cupful of this batter may be used to start or lighten the cakes for the next day, instead of yeast, and so continue all the winter.

Quick cakes may be made by using one and three-fourths cups of buckwheat flour, one-half teaspoonful of salt, one pint of water, one tablespoonful of New Orleans molasses and one heaping teaspoonful of baking powder.

Perhaps you would like to compare the composition of the various cereal grains* in a dry state, so I will copy the table as given by Payen:

Composition.	Hard Wheat. Venezuela	Hard Wheat. Africa.	Hard Wheat. Taganrog.	Semi-hard Wheat. Brie.	White or Soft Wheat. Tuzelle.
Nitrogenous matter.....	22.75	19.50	20.00	15.25	12.65
Starch.....	58.62	65.07	63.80	70.05	76.51
Dextrin, etc.....	9.50	7.60	8.00	7.00	6.05
Cellulose.....	3.50	3.00	3.10	3.00	2.80
Fatty matter.....	2.61	2.12	2.25	1.95	1.87
Mineral matter.....	3.02	2.71	2.85	2.75	2.12
Totals.....	100.00	100.00	100.00	100.00	100.00†

Composition.	Rye.	Barley.	Oats.	Maize.	Rice.
Nitrogenous matter.....	12.50	12.96	14.39	12.50	7.55
Starch.....	64.65	66.43	60.59	67.55	88.65
Dextrin, etc.....	14.90	10.00	9.25	4 00	1.00
Cellulose.....	3.10	4.75	7 06	5.90	1.10
Fatty matter.....	2.25	2.76	5.50	8.80	0.80
Mineral matter.....	2.60	3.10	3.25	1.25	0.90
Totals.....	100.00	100.00	100.00‡	100.00	100.00

*In an ordinary state grain contains from 11% to 18% of water.
†Deviation from correct total; possibly an error in the amount of starch.
‡Deviation from the correct total of + 0.04.

To Prepare and Boil Tripe.—In preparing tripe to boil we scraped it until it was white and clean. It had been scalded with boiling water until the inside coating had been loosened and scraped off and washed through several boiling waters, and then soaked in cold water over night. We covered it with cold water and added one onion sliced, one sprig of parsley, twelve whole cloves, and twelve peppercorns. We placed it where it would simmer for six hours, and at the end of that time it was ready to be used in any way preferred.

Stewed Tripe.—In preparing stewed tripe we cut one pound of the honeycomb and one pound of the plain into pieces half an inch wide and one and one-half inches long. We cut two ounces of ham into small cubes, and having put it in a saucepan we added one slice of onion, one bay leaf and one sprig of parsley, and stirred it over the fire until a nice brown, and then mixed through it one tablespoonful of flour and added one pint of milk, stirring continuously until it boiled. We added the tripe, and salt and pepper to taste, and let it simmer gently for five minutes. We took out the onion, parsley and bay leaf, and it was ready to be dished and served.

Sauté Fish.—In preparing fish for sautéing we washed the fish and removed the scales, trimmed the fins, took out the gills, and then wiped it dry. We put four tablespoonfuls of drippings into a sautépan, and when hot put in the fish, which we had dredged with flour, salt and pepper. When one side had browned we turned it and browned the other. When done we removed it carefully to a heated platter and garnished it with parsley.

Bass, bluefish, porgies, flounders, weak fish and herring are good prepared in this way. Fish are usually drawn before we receive them.

Kidney Sauté.—In preparing kidneys for sautéing we split the kidneys lengthwise into two equal parts, removed the fat and sinews from the inside, and then cut the kidney into small pieces. We put two table-

spoonfuls of butter in a frying-pan, and when melted we added one small onion cut into slices and the kidney. We stirred it for three minutes over a brisk fire, then stirred in one tablespoonful of flour, then added one-half cup of water or stock, and one gill of sherry, and also salt and pepper to taste. We stirred it about one minute after adding the salt and pepper. It should be served immediately.

In all our stirring we use a wooden spoon.

Your affectionate cousin,
VIRGINIA REED.

LETTER XV.

December 29, 189–

My Dear Cousin Alethea: The professor's next lecture had for its title "Fermentation."

Starch can be converted by a ferment into maltose and by a dilute acid into glucose. Both are sugars, but in the glucose the starch undergoing the change has taken up one particle of water, while in the formation of maltose two particles of starch have taken up one particle of water. Cane sugar when acted upon by yeast makes equal quantities of dextrose and levulose. Unless the activity of the yeast is checked it will proceed to feed upon the dextrose and levulose. This true feeding is called fermentation. The stage of converting the cane sugar into dextrose and levulose is a purely chemical action, and is simply called ferment action. The yeast lives on the nitrogenous principles found in its food. The yeast plant in feeding is like any other living organism—it expels excreta, which in this case is in the form of alcohol and carbon dioxid. Since the growing of the plant depends on nitrogen and phosphorus, we can deprive it of them, and if we stop its growing we would prevent the formation of alcohol. If we were to permit the formation of alcohol the yeast would in time be killed by it, because the excreta of any organism acts as a poison to that organism. Of course the ferment of yeast is like other organisms in respect to the fact that if it exhausts all the food where it is, it will live on the matter stored within itself, and then if allowed to stand longer will die of starvation.

After alcohol has been formed, if the percentage is high it will act as a preservative; but a dilute

alcoholic liquid will turn sour if exposed to the air. This fourth stage is the production of acetic acid or vinegar from alcohol. Pure alcohol and water will not sour, and nothing can live in it. The Hebrews and Egyptians long ages ago knew that gas escaped in alcoholic fermentation and thought that it was a spontaneous change, but they did not know all about it. Now it is known that the only intervention of living organism in the process is in the ferment, knocking the glucose so to pieces that (C_2H_6O) alcohol and (CO_2) carbon dioxid are formed, and this with the first two steps take place without direct action of air. Air is, however, necessary to the formation of acetic acid. Oxygen of the air removes two of the hydrogen to form water and one of oxygen slips in to fill its place. All sparkling liquids are bottled before this action is complete.

$C_6H_{12}O_6 = 2(C_2H_6O + CO_2)$, $C_2H_6O - H_2 + O = C_2H_4O_2$ or acetic acid.

The professor showed us some yeast cells under the microscope? Yeast cells are of different varieties in the same yeast. Hansen was the first to pick out certain forms and thus grow special crops. Certain kinds produce alcohol, others glycerin, and others gum, all from the same sugar. These different kinds made brewing very uncertain. They now grow some that thrive best at the top of the liquid, and others which do best at the bottom of the vat, so now they can control the action in brewing. The one that thrives best of all is the alcoholic yeast plant.

The culture of the pure yeast plant is, indeed, a great advancement in science.

There are other ferments which produce an effect very similar to that of yeast. There is a bacillus which acts on milk sugar, producing lactic acid. Common yeast cannot ordinarily act on milk, but under certain conditions it can produce an alcoholic condition, as in koumiss. Yeast being a mixture of plants at certain temperatures, we grow certain ferments, and so have different actions produced. Koumiss is an intoxicating beverage.

Vinegar is the acetic acid produced from alcoholic fermentation when diluted with water. When there is five per cent. of the acetic acid present, the liquid has a sour taste, without irritating properties. Commercial acetic acid is made by evaporating the acid until its strength has increased to sometimes as high as one hundred per cent. When the ercentage of the acetic acid present is so high, it solidifies in the cold.

In making vinegar in large quantities they use a tank with a false top and bottom, and fill the intervening space with beechwood shavings. A dilute form of alcohol, made from an infusion of malt, trickles down through the false top over the shavings. Air is admitted from above and below. The tank is somewhat like a chimney in regard to the heat within it. The beechwood serves best for the living organisms, which flourish in these shavings. The air is necessary to bring out the sour liquid, and sometimes two vats are used, so that the whole is converted.

The burning of a blue flame at the mouth of a test tube containing a heated liquid is a sure proof of the presence of alcohol. As low as one per cent. has been detected in this way. Of course, vinegar may contain a very little alcohol.

The laws are very particular about the making of vinegar. Barley infused in water with a ferment, and the addition of hops, would make beer, but without the hops it would make alcohol and water. It must be very dilute if it is turned into vinegar. It should never run higher than about twenty per cent. and be changed into vinegar as fast as produced, in the same establishment, if they would avoid a heavy tax. This is a colorless liquid. Many demand a malt vinegar, so they color it with caramel. Some States forbid the coloring of vinegar, so they use a scorched malt.

A cheap vinegar is sometimes made from a little sulphuric acid and clear water.

In making charcoal from wood, tar and gas and a

notable quantity of acetic acid is also made. This acid has a tarry odor and is called pyroligneous acid, but by careful treatment the pure acetic acid can be obtained from it. It is colorless and is called vinegar extract, and when diluted makes what is called white wine vinegar, though, of course, it is not the pure white wine vinegar. Though these may be bogus, the acetic acid is real acetic acid. The malt infusion is made by spreading out the malt on the floor and heating it to kill the ferment. Though the malt is started with barley, they often add rice to it.

What are fruits? Fruits are the edible, succulent portions surrounding the seeds, and are used as desserts.

What fruits are most commonly used as articles of diet? Apples, grapes, oranges, peaches, pears, plums, quinces, apricots, cherries, currants, olives, dates, lemons, limes, pomegranates, pineapples, figs, bananas, nectarines, strawberries, raspberries, blackberries, gooseberries, cranberries, mulberries, bilberries, shaddock, citrons and melons.

What is said of the nutrition of fruits? They contain very little nutrition and are eaten chiefly for their salts and acids. Some fruits are ninety-five per cent. water.

Why are fruits useful as foods? Fruits are useful on account of the salts and acids they contain, and for their tonic action on the system. Their acids tend to liquefy the blood.

Which is the most important of our native fruits? Apples were formerly the most important; now grapes and oranges are in as great demand.

Are apples important as regular diet? Yes; they are regarded as brain clearers on account of the salts they contain. The skin should be removed before eating.

Are fruits usually cooked or eaten raw? About as many are eaten one way as the other. They are wholesome when raw, but are more easily digested when cooked.

What are compotes? Compotes are composed of fruits prepared in a syrup, the pieces of fruit being kept whole.

Give recipe for making apple sauce from fresh apples; from dried apples. Pare, core and slice six tart apples, and put them in a porcelain or granite kettle with one-half cup of water. Cook until tender, run them through a vegetable press, add sugar and nutmeg to taste, and a piece of butter the size of a walnut. Dried apple sauce is prepared in the same way after they have been soaked several hours, or over night, in water.

What is the best method of stewing prunes? Dried peaches? Wash the prunes thoroughly in cold water, cover with water, and let them stand several hours, or over night. Add sugar and simmer until tender. Remove the prunes carefully before they burst, and boil the syrup for ten minutes and pour over the prunes. Dried peaches are stewed in precisely the same way.

How do you bake apples? Wipe and core the apples, and bake them till tender. Serve with sugar and cream.

Give method for fruit dumplings. Make a biscuit dough. Roll out enough dough to cover the fruit and seasoning, which you put in the center, and cover with the dough. Bake or steam the dumplings.

What is vegetable jelly or pectin? Pectin is a somewhat gummy substance found in fruits, and corresponds to gelatin in meat and isinglass in fish. It coagulates when the heat is right, though it generally requires the addition of sugar.

What is fruit jam? It is fruit that has been cooked with sugar until it is so condensed that the fruit has lost all of its natural form.

Why do fruit jellies, if boiled too long, lose their gelatinous properties? Evaporation has destroyed the properties of the pectin.

What is the difference between evaporated and dried fruits? Evaporated fruit is that dried by steam

heat, and is often blanched by sulphur, while dried fruit is that dried in the open air or in an oven.

With what are fruit jellies usually adulterated? Tapioca. Grass seeds are used in the so-called strawberry jam. Coal-tar products are used to impart various colors.

Give the chemical composition of milk. Oil, casein, albumin, globulin, sugar, salts and water.

What is said of its nutrition and digestibility? It lacks iron from being a perfect food for an adult, and when taken properly it digests in about two hours.

What is the fatty matter of milk? Cream, which consists of minute globules of oil diffused through the liquid.

Which is the most nutritious, skimmed or whole milk? Whole milk.

At what temperature does milk boil? 213° Fahrenheit.

What is the acid of milk? Lactic acid.

What is sugar of milk? Lactose, a true sugar, and the only sugar our system assimilates without digesting.

What is the difference between raw and boiled milk? Boiled milk is much harder to digest than raw milk, because the nitrogenous parts are toughened by heating.

What is casein? The cheesy principle of milk.

What forms the thin skin covering boiled milk? Rapid evaporation of water from some of the particles of casein causes the casein to form a thin covering over the top of boiled milk.

Is it necessary for milk to boil for cooking purposes? No.

Which is more healthful, sweet or sour milk? Sweet milk for the child, and sour for the adult. In sour milk lactic acid has already acted on the curd and divided it into small particles.

What is koumiss and how is it made? Koumiss is a spirituous liquor prepared from milk by scalding one quart of sweet milk and adding one tablespoonful of

sugar that has been boiled with one tablespoonful of water. When at blood heat add one-sixth of a cake of compressed yeast. Stand in a warm place twelve hours, and then in a cold place as long, in a bottle turned on its side.

What is said of its digestibility? It is very easy to digest.

Give full directions for making butter. Warm the cream to a temperature of 56° or 58° Fahr., and it will not take long to churn it. After churning collect the butter, remove it to a bowl and stand it where it will be very cold for a short time. Work it thoroughly for five minutes, then add two even teaspoonfuls of fine salt to each pound of butter, and then work until all the buttermilk is out. Make into rolls or prints and stand in a cold place.

Why does it become rancid? Because of the presence of nitrogenous principles which are used as food by microbes.

How do you clarify butter? Melt the butter in a farina boiler and pour off the upper part which is clear. The French always clarify their butter for cakes, because they think it creams and keeps better.

What is oleomargarine? Butterine? Animal olein and palmitin churned with sweet milk, to which has been added coloring matter.

How may you determine the difference between false and true butter? By heating it. True butter melts quietly, foams and retains the foam, and browns quickly, while the false butter makes more noise in melting and does not foam, though a few large bubbles form, which soon disappear, leaving an orange-colored liquid that smells like lard; or, if caustic soda is added to true butter when melted, it will give an odor like pineapple.

What is bonny clabber? Whole milk that has soured and in which the curd has not separated from the whey.

What is schmierkäse? Cottage cheese, or the curd or clabber from sour milk.

How is it prepared? Schmierkäse is prepared by heating sour milk or clabber until all the whey is separated thoroughly from the curd by draining, and pepper, salt and cream then added to the curd; after mixing well it is ready to be used.

What is cheese? Cheese is the curd of milk condensed under pressure.

What may be said of its nutrition and digestibility? Cheese is very nutritious for those who can digest it. It is so concentrated that it is very hard to digest.

When should uncooked cheese be eaten? At the close of a meal.

Which is more easily digested, cooked or uncooked cheese? Cooked.

Give four popular methods of cooking cheese. Welsh rarebit, cheese ramakins, cheese and macaroni, toasted cheese or Scotch rarebit.

CECILS.—In preparing cecils we run two cupfuls of cold cooked beef through the meat cutter and put it in a frying-pan together with two tablespoonfuls of bread crumbs, one ounce of butter, one teaspoonful of salt, one teaspoonful of onion juice, one-fourth of a grated nutmeg, the beaten yolks of two eggs, and two dashes of pepper, and stirred it over the fire until thoroughly hot. We turned it out on a large platter and spread it out so as to make it cool more quickly. When cold we formed it into balls about as large as walnuts, and dipped the balls first into a beaten egg to which had been added one tablespoonful of boiling water, and then covered it with bread crumbs. When all of it had been formed into balls and dipped in crumbs we placed a few of the balls in a wire frying-basket and placed the basket in oil which was steaming hot, it having been on the stove heating slowly for some time. A good way to test the heat of the oil is to drop into it a small piece of stale bread; if it browns quickly the heat is right. When the balls were brown enough we drained the basket, placed it on a plate, lifted out the balls and put them on a piece

of brown paper on a plate, and fried the rest. These cecils were served on a heated plate with Bechamel sauce.

Béchamel Sauce.—We made the Béchamel sauce by melting, without browning, one tablespoonful of butter in a saucepan and then mixing with it one tablespoonful of flour; when smooth we added one-half cup of stock and one-half cup of cream, stirring constantly until it boiled. We removed it from the fire and added one-half teaspoonful of salt, two dashes of pepper, and the well-beaten yolk of one egg. One dash of pepper means three shakes of a pepper-box whose top is about as large as a silver quarter. Béchamel sauce is considered very nice with baked or boiled fish, cutlets, sweetbreads, or chicken.

Codfish Balls.—In preparing codfish balls we picked enough salt codfish into small pieces to fill two cups; we soaked the codfish for half an hour in cold water, and after draining it well, covered it with boiling water and let it stand on the back part of the stove for fifteen minutes. We drained and pressed out all the water and mixed with the fish two cupfuls of well-beaten mashed potatoes, one ounce of butter, one-fourth of a cup of cream and one-fourth of a teaspoonful of pepper, and beat it well together. We formed it into balls, dipped them in beaten egg, rolled them in crumbs and fried them the same as the cecils.

French Fried Potatoes.—In preparing French fried potatoes we pared the potatoes and let them stand in cold water for an hour. We cut the potatoes in thick slices or blocks lengthwise, dried them quickly with a towel and dropped them into the heated oil. When done we put them in a colander and placed the colander on a tin pan and slipped it into the oven, leaving the door open so they would keep warm until all were fried. When all were done we sprinkled them with salt and turned them into a heated dish. They should be served at once. When cut with a vegetable spoon they are used as a garnish for either baked or boiled fish.

Beef Croquettes.—In preparing beef croquettes we put one-half pint of cream or milk on in a farina boiler, and when scalding hot we stirred into it one ounce of butter rubbed smooth with two large tablespoonfuls of flour, and stirred until it was very thick. We removed it from the fire and added one pint of finely chopped cooked beef, one large tablespoonful of chopped parsley, one teaspoonful of onion juice, one teaspoonful of salt, one-fourth of a nutmeg grated, and cayenne and pepper to taste. Mix well together and pour out on a large platter to cool. When cold and hard we formed it into cone-shaped croquettes. We tried moulds, which are made for the purpose of shaping them, but decided we could shape them about as well with our hands. We dipped the croquettes in the beaten egg and then in the bread crumbs and fried them the same as the cecils. Before serving, we stuck a small sprig of parsley in the apex of each cone. If all the fried croquettes are not eaten they can be warmed over by putting them on soft paper and standing them in the oven a few minutes.

Fried Oysters.—In preparing oysters for frying we drained them in a colander and wiped each one dry with soft linen or an old napkin, handling them carefully with our fingers, *never* with a fork, and seasoned them on both sides with salt and cayenne. We beat an egg and added one tablespoonful of boiling water to it. (The egg had not been separated.) We dipped each oyster in bread crumbs, then in the egg, and laid it again on the bed of bread crumbs; after covering it completely with the crumbs we pressed it lightly with our hand, and then taking the oyster up in our fingers shook it very gently so as to remove the loose crumbs. We spread them in a cool place, where they did not touch each other. They can be prepared an hour or two before frying them. When the oil was hot, or at about 365° Fahr., we put six oysters in the frying-basket and placed it in the oil, and when they were a golden brown we lifted them out of the oil, placed them on a soft piece of brown paper and then removed

them to a heated dish. They must be served at once, as they are not so good when kept warm. Pickles of some kind should always be served with oysters, though, of course, in another dish.

CARE OF OIL AFTER FRYING.—When through frying for that meal the oil should be drawn to the coolest part of the stove, and when it has cooled somewhat it should be drained through a very fine sieve into a clean vessel. It is in that way deprived of all sediment and kept in a fit condition for further use. When cold cover it closely.

Your affectionate cousin,

VIRGINIA REED.

LETTER XVI.

December 31, 189–.

My Dear Cousin Alethea: The last few days before school was out the usual routine was decidedly broken up. For two mornings a young woman from Syria came in and prepared some Syrian dishes. The first thing she did was to make and bake bread. It was very interesting to watch her. She was not more than five feet tall, if that, and very plump. She was well dressed and had several bracelets on each arm; the bracelets were fastened on, so could not be removed. We would have thought them very annoying when making bread. She, however, did not seem to mind their falling about her hands. She said she had worn them many years, so, of course, was accustomed to them.

Syrian Bread.—The young woman put one pound of flour in a bowl and added one and one-half teaspoonfuls of salt. With one-half of a cake of compressed yeast she made a biscuit of leaven by dissolving the yeast in one tablespoonful of lukewarm water and adding about two tablespoonfuls of flour—enough to make a very soft biscuit. This little biscuit was put in a quart jar of warm water, and when it came to the surface, in about five minutes, it was added to the flour and salt in the bowl, and a little more water was added so she could knead it, but it was *very* stiff. She placed the bowl on the floor, knelt down by it, and kneaded away until the dough was smooth. The bowl containing the dough was placed in the bread raiser to grow light. When light she took a small portion and pressed it flat on the breadboard, pressing it with the

fingers, but leaving it thickest in the center. When she had pressed it out as large as a plate she tossed it from hand to hand. When it had stretched out so as to become translucent, she put it on a pad or pillow and stretched out the edges. Then she grasped the pad firmly underneath and inverted it over the stove, leaving the bread dough in a thin sheet on the top of the stove. They prefer the bread unbrowned, so she began at once to loosen it and it was done. It tasted good and was so translucent that it made me think of rice paper.

Other small portions of the dough she allowed to grow somewhat lighter, and then baked them in a quick oven, so that they puffed up and were hollow like an empty box. These they fill with olives, dates, figs or cheese when taking a journey.

Cabbage Rolls (*Mahshey Malfouf*).—She prepared cabbage rolls, though the name she gave them sounded like Mahshey Malfouf. She used one and one-half pounds of lean mutton and one-half pound of fat cut into small blocks, one cup of uncooked rice, one teaspoonful of powdered cinnamon, two teaspoonfuls of salt, and one-half teaspoonful of pepper. All these ingredients she mixed well together, and then took a tablespoonful of the mixture, rolled it up in a cabbage leaf and tied it with a string. The cabbage leaves had been separated from the head, parboiled, and the coarse part of the mainribs cut out. The bones from the mutton and the ribs from the leaves were put on the bottom of the kettle and the cabbage rolls placed on them. One root of garlic was cut up and scattered over, and the juice of one lemon, though she said two would be better, was poured over the whole, and a dinner-plate turned upside down was placed on the cabbage, and all was nearly covered with boiling water and left to simmer for about two hours. The strings were removed before serving.

They do not like beef and think mutton is more healthful. They never serve meat in a large piece, but use two knives to cut it fine or else beat it.

Syrian Hash (*Kabab*).—She prepared a hash which she called Kabab, using three-quarters of a pound of mutton cut fine, one heaping tablespoonful of chopped parsley, one onion chopped fine, one teaspoonful of cinnamon, one tablespoonful of flour, one and one-half teaspoonfuls of salt, one-fourth of a teaspoonful of pepper, and about one-fourth of a cupful of finely chopped almonds were added. All the ingredients were mixed well together and formed into cakes, which were placed in a baking pan, and one-third of a quart can of tomato juice poured over them, and the pan put in the oven for thirty minutes, or until done. Of course the length of time would depend somewhat on the tenderness of the meat.

Sometimes they chop pine nuts or almonds very fine and place them in the center of each cake, or the pine nuts are very good with chicken, prepared as above, with the tomato sauce.

Sweets (*Määmoul*).—The young woman from Syria also prepared some of their sweets. For the one she called Määmoul she used one pound of sheep's butter (if cow's butter were used it would have to be clarified), two pounds of farina and a little flour so it could be worked, one-half teaspoonful of soda and three tablespoonfuls of water. She worked it well together, then took a piece as large as a hen's egg and holding it in one hand she made a hole in it with a finger of her other hand, and by turning and pressing she made the hollow space grow larger until the outside of the piece was almost as large as a goose egg. The hollow space is to contain a filling made of one cupful of finely chopped almonds and one-half cupful of sugar, flavored with extract of rose. She poured orange-flower water over all and mixed it together, and after filling the cavities she pressed the edges together, shaped it with her hands, and then ornamented it with various designs. The quantity given made six cakes. She baked them in a quick oven and left them in the pan until cold. She sprinkled them with sugar as soon as she took them out of the oven, and

when she served them she drenched them with orange-flower water.

Sweets (*Graybee*).—The other sweet she prepared she called Graybee. For it she used four and one-half ounces of sheep's butter, four and one-half ounces of flour, as much sugar as you like, and one half teaspoonful of soda. The butter and sugar were creamed together and orange-flower water was used for flavoring. When all was mixed together, she moulded it in various shapes, using almonds to rep-

resent scales and peppercorns for eyes. She baked them in a quick oven.

Fondant.—We spent a few days in making candies. We put one pound of the best granulated sugar in a granite saucepan and added three-fourths of a cup of boiling water and stirred it with a wooden spoon until the sugar dissolved, but not any longer We have to be very particular in making fondant or the syrup will granulate. We dipped a sponge or cloth in ice water and wiped off the crystals that had formed on the sides of the pan, because if they should fall into the liquid they would cause granulation. We were careful not to jar the pan for the same reason. We wiped the crystals off several times in the six minutes. When the syrup had boiled about six minutes, we tested it by putting two fingers in ice water until very cold and then plunging them quickly into the boiling syrup and back at once into the ice water. When the syrup adhering to the fingers forms a soft ball, we poured the syrup out on a lightly greased marble-topped table, and did not scrape the saucepan, as that might cause it to granulate. If we had not had such a table we would have used a large meat platter. We had to test the syrup several times before it was ready

to take off, but we were very careful not to stir the syrup. In testing the syrup we worked rapidly, because the syrup passes quickly from one stage to another. When the syrup on the table had cooled so we could stick a finger in it, we stirred it rapidly with a wooden paddle till it formed a creamy thick mass, and when it began to crumble we kneaded it with our hands exactly as we would bread dough, and then put it in a bowl and covered it with a damp cloth.

When kneaded it should soon become smooth and soft; if it remains lumpy it has boiled too long. If it seems too soft—liquid—it has not boiled long enough, but will do to use for dipping purposes.

To ensure success in making candy, never boil but one pound at a time, and never attempt that on a rainy or damp day.

The next morning we made a variety of candies from this fondant by taking off small pieces from the mass of fondant and kneading a different flavoring into each piece.

ENGLISH WALNUT CREAMS.—In making English walnut creams we took pieces of vanilla flavored fondant about as large as a common marble and pressed the half of a walnut on opposite sides of each piece, and then patted down the edges of the fondant so that they would look finished. We placed them on a plate to harden.

CREAM DATES.—We made cream dates by taking the seed out of the date at one side, putting in its place a little roll of the vanilla fondant, and pressing the edges so only a line of the candy could be seen, we rolled the dates in granulated sugar.

CREAM CHERRIES.— Cream cherries we made in the same manner as cream dates. For them we used candied cherries and vanilla fondant.

NEAPOLITAN CREAM BLOCKS.—We made some Neapolitan cream blocks by using three pieces of fondant. One was white with vanilla flavoring, another had the grated rind of an orange added, and

the other had enough cocoa added to give it a brown color. We rolled each piece until half an inch thick, and placed the chocolate on the vanilla, and the orange on top of the chocolate, and rolled them two or three times with a rolling pin. When inclined to stick we used confectioners' XXX sugar to dust with. We trimmed the edges of the three layers and cut all of it into diamond-shaped pieces.

Oranges Glacés.—In making oranges glacés we first peeled the oranges very carefully, taking off every particle of the white skin, and separated the carpels and put them on tin plates, which we placed where the skin of the carpels would soon dry. We then put one pound of sugar in a saucepan with half a pint of water and stirred until the sugar was dissolved. We wrung the sponge out of cold water, and wiped the steam and crystals from the inside of saucepan. When the bubbles that formed on the syrup began to look tough, we added two tablespoonfuls of vinegar to keep the syrup from granulating. We tested this syrup by holding two fingers in a basin of ice water until very cold, and then plunging them quickly into the boiling syrup, and then back again into the ice water. When the sugar was stiff and brittle, and came off from the fingers easily, we watched carefully, and the moment it began to turn we took it from the fire and placed the saucepan in a basin of hot water on the table, and began to dip the orange carpels one at a time into the syrup and then placed them on oiled paper.

Grape and Cherry Glacés.—We dipped grapes into the syrup prepared for the oranges. We had first cut each grape from the bunch, leaving as long a stem as possible. The same syrup is used for cherries glacés. Cherries are very easily dipped, because their stems are so long.

If the syrup becomes too cold it can be reheated twice.

Never attempt to glacé on a damp day.

Cream Chocolates.—In making cream chocolates

we first worked one teaspoonful of vanilla sugar into one-half pound of fondant and formed it into balls the size of a marble, or into small pyramids, and stood them on oiled paper in a cool, dry place to harden for three or four hours. We melted one-half pound of unsweetened chocolate or cocoa in a small double boiler, and when melted we added an equal quantity of melted fondant. If the two together are too thick for a smooth covering, add one teaspoonful of vanilla and a little hot water one drop at a time until it is the proper thickness. In melting fondant we placed it in a small saucepan, which we placed in a vessel containing boiling water and stirred constantly until it was the consistency of thick cream. We added this melted fondant to the chocolate in the double boiler and left it in the double boiler, which we placed on the table. We brushed the candy dipper with butter and with the left hand dropped the pyramids of fondant into the chocolate fondant and took them out quickly with the dipper, scraping it against the side of the boiler so as to remove any extra amount of covering, and placed it on the oiled paper, giving it the little twist or curl on top like those you buy.

If, however, a darker, glossy covering was desired, we melted bakers' chocolate and added sugar to sweeten, and vanilla extract to flavor, and dipped the balls or pyramids in it.

If the fondant cools before the dipping is completed, it can be reheated, but must be stirred all the time. When it was first placed on the table it might have had a lighted alcohol lamp placed under it, and in that way have been kept at the same temperature until the dipping was completed.

The professor's last lecture was on "Oils and Fats."

In the first place there are several classes of bodies called oils and fats. The volatile oils are those which give the peculiarity to perfumes and flavors. A volatile oil which gives an agreeable perfume or flavor may be chemically the same as one which gives a dis-

agreeable odor. Indeed the volatile oil of some articles of the vegetable kingdom is at first offensive, but after a time we become so accustomed to it that we finally grow fond of the things containing it. Volatile oil leaves no permanent greasy stain. Such oils are also called essential oils, because they are the part for which we use the plants. These oils are divided into two divisions, one containing sulfur and the other containing no sulfur. These oils are a compound of carbon and hydrogen, with or without sulfur. People have to become accustomed to sulfureted oils.

The essential oil of the rose, orange, etc., contain carbon and hydrogen only, and have no food value, so little of them is taken, and when taken in large or concentrated doses they prove to be poisonous.

Fats and oils are different from the volatile oils and are very abundant in both the animal and the vegetable kingdoms. Fats are oils that become solid at common temperature. Waxes are not exactly identical with oils and fats. They are indigestible, so we do not eat them. Fats and oils are fixed oils because they leave a permanent stain which gathers dust and dirt. Fixed oils and fats are food products.

About 1810 a Frenchman named Chevreul published a paper which brought up our chemical knowledge of this subject almost to its present state. Oils and fats are mixtures of several things which are nearly, but not exactly, alike. Suet contains three, and, indeed, each of the oils as we know them has two or more in it. All become solid when kept on ice, and all become liquid when the heat is increased. Olein becomes liquid at a low temperature; palmitin is obtained from the palm and is ordinarily solid; stearin is solid in animal fat; butyrin is liquid in butter; caproin and caprylin have an odor like animals. Margarin is a solid of a pearly luster, and is an artificial product made in the laboratory. So when we combine two or three of these oils we obtain an article whose consistency depends on the quantity of the different oils used. Suet when solid contains olein, palmitin and stearin.

Heat the suet by steam to a certain temperature, draw off the liquid and cool to a certain degree, and we have oleo-oil, and after churning it with milk it is called oleomargarine. The stearin left is made into candles. At first the olein and stearin were deducted by themselves, but instead of obtaining the palmitin pure, it had some of the stearin in it, and they named it margarine. That is the way imitation butter received its name oleomargarine. Now margarine means something else.

Oleomargarine is not a good substitute for butter; indeed, butter is a peculiar fat and no other fat can take its place. Butter is secreted for food for the young animal just as the oil in the cotton seed or olive is stored up for the young plant. Fat of butter has the function of supplying food for the young animal and is eminently successful in that work. When the animal secreting the milk is treated or fed with the purpose of increasing the quantity of fat globules, the linings of the milk ducts, or epithelium pavement, undergoes a transformation. The cells of this lining are composed of nitrogenous matter, and as these cells are worn out their places are filled by others. In producing such unusual quantities of fat globules the lining undergoes a fatty degeneration similar to that of a fatty heart. The fat of butter is decidedly different from all other fats and has no odor. Butter contains olein, palmitin, stearin, butyrin, caproin and caprylin. It is believed that the fats in butter are more closely associated than in any other one article.

Butter is the most highly nutritive of all fatty foods, and also one of the most dangerous, on account of the disease germs it may contain. Milk is the only animal food we take in a raw state. Butter made from scalded cream taken from pasture-fed cows is the most healthful.

The professor expressed the belief that tuberculosis and other disease germs will in time be under as good control as smallpox is at the present time.

Your affectionate cousin,

VIRGINIA REED.

LETTER XVII.

January 11, 189–.

My Dear Cousin Alethea: "Oleomargarin" was the title of the professor's lecture last week.

Congress has made a law by which any substitute for butter, though it contain but one per cent. of oleomargarin, shall be called oleomargarin and be taxed as such. The name oleo-palmitin would have been more accurate, taking into consideration its composition.

When it was first made lard was the fat used in compounding it, now other fats are used in various ways. The professor thinks it is as much of a fraud as a counterfeit bill and should be dealt with as such. Pennsylvania and Iowa prohibit the sale of it, even though the United States laws require each package to be plainly marked. The professor thinks it unsuitable for food since it does not satisfy the appetite. Indeed, no fat has the same effect on the system as butter. It is not of advantage to the poor because it sells at the same price as true butter.

Heat is the usual test applied by the ordinary housekeeper to detect the genuineness of the article purchased. True butter heats and foams and keeps the foam. Oleomargarine makes more noise, does not foam, though it forms a few large bubbles, which soon disappear. The salt shows on top of an orange-tinged yellow oil which smells like lard.

Clarified butter, or that which has been filtered, acts more like oleomargarine, but the difference is easily detected by the following method: Boil butter with a solution of concentrated lye (made by dissolving a piece the size of a cherry stone in alcohol).

When you pour the solution into water the butter gives off the odor of pineapple, while from the oleomargarin you only have the odor of alcohol. Of course there is a decided chemical difference between the two.

The method of analysis is to take about a thimbleful of the pure fat obtained by melting the sample and straining, or putting it in a filter which you stand in the oven till it all runs through, leaving the salt and residue in the filter. Add a mixture of alcohol and soda to the fat and boil until it turns into soap. You have to go on boiling till all the alcohol has evaporated and the soap is dry. This required so much time that they devised another way in which, in five minutes, they could accomplish as much as they formerly did in two hours. In this way glycerol and soda are added to the pure fat, the mixture foams on account of the water present, and when it has boiled and the soap is done, they add cold water, drop by drop, till a certain amount has been added and it is all chilled; then they add a definite quantity of sulphuric acid and a piece of pumice stone the size of a common marble. The sulfuric acid decomposes the soap, which resolves it into oleic, palmitic, stearic, butyric and caproic acids. The presence of the butyric acid gives a strong odor of rancid butter. If the first three acids only are present the article was unquestionably oleomargarin, but to detect the presence of butyric and caproic acids you subject the whole five to a process of distillation. If what distils into the glass is a decided acid it shows that it was butter, but if the acid is very faint it shows that oleomargarin was present, with a little butter.

What is the chemical composition of eggs? The white contains water, albumin, mineral matter and a trace of sulphur. The yolk contains water, oil, a modified albumin called vitelline, sulphur, phosphorus and mineral matter. The mineral matter of eggs is composed of phosphates of lime, potash, soda, magnesia and iron. The shell is chiefly composed of carbonate of lime.

What may be said of their nutrition and digestibility? They are very nutritious and easy of digestion when properly prepared.

At what temperature does the albumin coagulate? One hundred and thirty degrees Fahrenheit.

Give the proper method for soft-boiling an egg. Drop an egg that has been standing in a warm room for some time into a vessel of boiling water, and draw the vessel to the coolest part of the stove and let it stand five minutes. Allow one pint of water to each egg.

Which cooks more quickly, the yolk or the white? The yolk.

How may you determine fresh eggs without breaking them? By putting the eggs in a vessel of water. The fresh ones sink to the bottom.

Why does a good egg sometimes "rattle?" On account of the presence of air within the shell. The quantity of air increases to take the place of the liquid of the egg which evaporates.

Which is the most nutritious, the yolk or the white? The yolk in hard-boiled eggs, because it is made mealy by the oil. In soft-boiled eggs the white is the most nutritious.

How is the nutrition of eggs compared to that of beef? Weight for weight eggs are much more nutritious than beef.

What kind of eggs are usually employed for cooking purposes? Eggs from domestic fowls.

Why do eggs become lighter as they grow older? Because water is evaporated from the albumin and air enters and fills the space left within the shell.

How may eggs be preserved during the winter season? By excluding the light and air, as by packing in salt, sawdust, bran or grain, in lime water, or by greasing or varnishing.

Give the most wholesome ways of cooking eggs. Poached and soft-boiled.

What is the proper method of poaching an egg? Have a stewpan two-thirds full of freshly boiling

water; draw the pan to the edge of the stove and slip the egg, which you have broken on a saucer, into the water and continue to break the eggs in the saucer and slip them into the water until the bottom of the vessel is covered. Put the stewpan over a moderate fire, and when the water boils again the eggs will be done, with the yolk thinly veiled by the white. Take them up, trim off the ragged edges and serve.

Give the names of fish in common use. Anchovy, bass, blue, cod, carp, cat, chub, halibut, haddock, herring, brill, perch, pike, pickerel, plaice, mackerel, muscalonge, shad, sole, smelt, sturgeon, salmon, sardines, sunfish, sheepshead, rock, roach, turbot, trout, tarpon, white, whiting, flounder, weak, lamprey, eels, butter fish, porgies and tailor fish.

Give the chemical composition of fish. Water; nitrogenous matter, including albumin, creatin and fibrin; fat, common salt, phosphates, potash salts and other mineral matter.

What is said of its nutrition? The flesh of fish does not possess the satisfying and stimulating properties that belong to the flesh of quadrupeds or birds, still it is an important article of nourishment.

At what season are fish best for food? During the summer. White fish are better in the winter and dark in the summer.

How may you determine a fresh fish? If the eyes are bright and the flesh is firm, and there is not too strong an odor, the fish is fresh.

What fish are best for boiling? Broiling? Frying? Baking? Planking? For boiling use salmon, cod, haddock, rock and bass. For broiling use trout, blue, shad, halibut and mackerel. For frying use smelts, perch, cat, trout, halibut steaks and small fish generally. For baking use shad, blue, white and rock fish. For planking use shad.

Give the proper method for boiling, frying, baking and broiling fish. For boiling fish, clean, wipe and wrap in cloth, put in boiling water containing a little salt and simmer ten minutes to the pound. For frying,

clean and wipe the fish, dip in egg, then in bread crumbs and immerse in heated oil. For baking, clean and wipe the fish, stuff with a dressing made of bread crumbs, butter, chopped parsley, pepper and salt. Dredge the outside of the fish with flour, salt and pepper, and bake it fifteen minutes to the pound, basting every ten minutes. For broiling, clean and wipe dry, place on an oiled broiler and broil with the skin side up until done, then turn and brown the skin.

Do fish contain albumin? Yes.

How is the nutrition of fish compared to that of beef? It is not so nutritive and its fibre is harder to digest.

What causes the flesh of some fish to be white and that of others colored? In the white fish the oil is stored in the liver and in the colored fish the oil is distributed through the flesh, and the white have little blood with only a few red corpuscles.

Give the proper method of washing fish. Wash quickly in cold water and keep them under the water while removing the scales.

What effect does the moon have upon fish? Why? The moonlight causes the fish to spoil on account of the attraction it has for the phosphorus in the fish.

What fish are best to salt? Cod, mackerel, haddock, salmon, shad and herring.

What is the best method of freshening salt fish? Soak in cold water over night, or if you do not wish to wait so long, change the water several times, letting it come to boiling point and pour it off, then put on more cold water. The water gradually becoming warm draws out the salt more quickly than cold water.

Give the best method of cooking. Simmer until done. Never boil a salted fish, but keep the water at scalding point.

Give three methods of cooking salt cod. Codfish balls. Stewed and served with cream sauce. Boiled and served with egg sauce.

What are eels? How should they be cleaned and

cooked? Eels belong to the *Apoda* order of fish and possess a snake-like form, though they have very minute scales, which may be seen when the skin is dried and the semi-transparent outer skin is removed from the inner skin. Eels should be skinned before cooking. They are best sautéd.

What fish have no scales? Sturgeon, pike, haddock, halibut, cat, mackerel, eels and lampreys. All fish without visible scales are scavengers.

What is the edible part of frogs? The hindquarters, though some people use all but the head.

Give the best methods of preparing frogs. Skin them and throw them in boiling water for five minutes. Remove from the boiling water and put in cold water until cold. Wipe dry, season with salt and pepper, and dredge with flour and sauté in butter, or prepare as for sautéing; make a sauce with stock and simmer the frogs in it for ten minutes.

What fish have the oil distributed throughout the body? Salmon, mackerel, eel, herring, sprat, bass, blue, sardines, sturgeon and shad.

What are sardines? Give the best method of cooking them. Sardines are small fish of the herring family found in the Mediterranean Sea. They are best broiled.

Name the shellfish in common use. In the division of Mollusks are found oysters, clams, cockles, scallops, mussels and periwinkles, while in the division of Crustaceæ are the lobsters, crabs, shrimps and prawns.

Are shellfish as nutritious and digestible as fish? Taken as a class, no.

Which is the most easily digested of the shellfish? Oysters.

What part of the oyster should be rejected as indigestible? The muscle.

Describe the stomach and liver of the oyster. The dark of the soft part is the liver and the sac in its center is the stomach.

What proportion of the oyster is liver? One-third.

At what season of the year are oysters not eatable?

Why? They are not eatable from May to September, because that is their season for spawning.

Give the popular methods of preparing oysters. Stewed, scalloped, fried and broiled.

ENGLISH MUFFINS.—In making English muffins we scalded one pint of milk and added one ounce of butter and one teaspoonful of salt; when lukewarm we added one-half cake of compressed yeast dissolved in two tablespoonfuls of lukewarm water, and then stirred in about three cups of flour, and beat continuously for five minutes, then stood it in the bread raiser for about two hours. When light we added more flour, so as to form a soft dough, and after working it lightly we divided it into small biscuits or balls and placed each one in a well-greased muffin ring. We covered them, and when they had grown light we baked them on a griddle on top of the stove until they were a nice brown. If we had not had the muffin rings we would have used gem pans, and then of course we would have baked them in a hot oven. Muffins are always pulled open, because cutting them with a cold knife makes them heavy. One-half cup of liquid yeast could have been used instead of the compressed yeast.

POP-OVERS.—In making pop-overs we beat three eggs, unseparated, until light, and added them to one pint of milk, with one-half teaspoonful of salt. We made a well in two cups of flour and gradually poured the milk and eggs into it, stirring all the time, then beat it as smooth as possible and strained it through a sieve, so as to be sure there were no lumps remaining. We had heated the well-greased gem pans until very hot, so we filled them half-full with the pop-over mixture and baked them in a quick oven for about twenty-five minutes.

PLAIN WAFFLES.—In making plain waffles we rubbed two ounces of butter in one quart of sifted flour, added one teaspoonful of salt, then three cups of milk which had been scalded and cooled, and then one-half

cake of compressed yeast dissolved in two tablespoonfuls of lukewarm water. We beat it thoroughly for at least three minutes, and put the bowl in the bread raiser, which, of course, was partly filled with warm water, and left it there for about two hours, until it was very light. We beat three eggs until light, added the yolks to the batter, and then the whites, and let it stand fifteen minutes. The waffle-iron had been heating gradually and was very hot. We brushed the iron thoroughly with melted suet and poured the batter on the iron until the elevations were covered, and then closed the iron and turned it over. The waffle will be baked a nice brown in about two minutes. It should be removed to a heated plate and served at once. The best way to fill the iron is to have the batter in a pitcher, then it can be poured quickly into the iron.

CHICKEN IN JELLY.—In preparing a chicken in jelly we cleaned the chicken and cut it up as we did for stewing. We put the chicken in a kettle and added one bay leaf, one small onion sliced, three whole cloves, one blade of mace, salt and pepper to taste, and covered it with boiling water and left it to simmer slowly until tender. When done we cut the chicken from the bones and removed all the skin, and when cold stood the meat away until the next day. The bones and skin were returned to the kettle and simmered for another hour. While the bones and skin were simmering we had one-fourth of a box of gelatin soaking in a little cold water. When the liquor was reduced to about three cups, we added the gelatin to it, stirred it for a moment, and then strained it into a granite vessel. The next morning we removed all the fat from the top of the jelly and melted the jelly by standing the vessel on the stove; and when melted we poured about one third of the jelly in a mould and placed it on the ice to harden. When it had become hard we placed a layer of chicken on the jelly, and slices of three hard-boiled eggs on it, and dusted lightly with salt and pepper; then we placed another

layer of chicken and egg, and when all of the chicken and eggs had been arranged we poured the remainder of the jelly over them. The jelly was liquid though cold. We placed the mould where it would keep cold, and when it was wanted we turned the jelly carefully from the mould and garnished it with parsley, though the light-colored celery tops make a very pretty garnish.

MINCE-MEAT.—In making mince-meat we covered a sticking piece of beef weighing two pounds with boiling water, let it simmer until tender, and then let it stand in the liquid in which it was cooked until cold. When cold we ground or chopped the meat fine, and also shredded and chopped fine two pounds of beef-suet. We shredded one pound of citron, pared, cored and chopped four pounds of apples, and added two pounds of sultana raisins, two pounds of sugar, one-fourth ounce of mace, one-fourth ounce of cloves, one-half ounce of cinnamon, two nutmegs grated, one teaspoonful of salt, one-half pound of candied lemon peel cut fine, two pounds of layer raisins which had been seeded, and two pounds of currants which we had first cleaned by rolling and rubbing them in a cup of flour. We washed off the flour, stems and dirt by pouring cold water several times over the currants, which we had placed in a colander. We then poured scalding water over them, and then cold water. When they had drained, we spread them on a granite pan to dry, and placed the pan in a cool oven, leaving the door open. We mixed all these ingredients well together, added the juice and grated rind of two oranges and the juice and grated rind of two lemons, and after mixing thoroughly we packed it in a stone jar and poured over it one quart of sherry, or home-made currant wine, and one quart of good brandy, covered it closely and stood it in a cool place. They said this mince-meat would keep all winter, and that some people prefer to use the heart, or fresh beef's tongue, instead of the sticking piece.

I dare say you think anything with so much liquor

in it would "keep forever," if you had the using of it. Do not imagine, because I send you such recipes as were used at school that I have forgotten our determination never to offer liquor in any guise to any one, for we know not what tastes might be thereby awakened. I think I shall never forget the impression made on us by our fathers' friend when he told us what a struggle it was for him to pass by a door if he caught the odor of liquor, and how his dark eyes glowed when he spoke of his brother who had not been able to resist, for this longing for liquor had come down to them from one generation to another for ages.

Your affectionate cousin,

VIRGINIA REED.

LETTER XVIII.

January 20, 189–.

My Dear Cousin Alethea: The professor of chemistry performed the experiment of "Testing Butter," so we would be sure to understand the subject.

The first thing to do in testing butter or oleomargarin is to get the pure fat separated from the salt, curd and water, which is done by melting and filtering. The professor took a small tablespoonful of the butter, heated it until it melted, and then held it still until the water settled to the bottom, when he turned the fat into a paper filter in a glass funnel, which was placed in a tumbler and the whole put into the oven to keep the fat heated. The pure, clear fat runs through the filter. If the fat is not clear it has to be filtered again. The professor used a definite volume in the analysis, so that the work done at one time would compare with that done at another. He put one-half thimblerful of the pure butter-fat into a flask and converted it into soap by the alkali and glycerol method, which is the quickest method yet devised. One ounce of caustic soda is made into a solution with one ounce of water. To ten volumes of this solution ninety volumes of the best commercial glycerol is added. A certain amount of this prepared glycerol is added to the butter-fat and the whole is heated till the soap is made. When the soap ceases to foam all the water has been driven off. The liquid has a clear amber color. A definite amount of water slowly added makes soapsuds.

Each fat found in the butter makes its own soap, and when these soaps are decomposed by the addition

of five centimeters of strong sulfuric acid, from each fat we obtain its own acid. The whole quantity looked curdled, and the butyric acid gave the decided odor of rancid butter. Had the substance tested been oleomargarine there would have only been a slight fatty odor, because it contains only a very little stearin, and some olein and palmitin, which do not distil in an open vessel. Butter contains in addition to these some butyrin and caproin, which, when boiled and distilled as in this test, give butyric and caproic acids. When these solutions of acids are heated the acids float on top.

When butter has been thoroughly worked the buttermilk is all worked out. Butter has been tested which contained forty per cent. of water, though analysts think that over fourteen per cent. of water makes the butter more liable to spoil. Butter can be incorporated with milk by heating the milk and stirring in the butter. True butter varies, so that it is hard to say how much water it should be allowed to contain.

The decomposition of the butter is caused by the microbes of the air and milk feeding on the curd or cheesy part of the milk in the butter. They could not live on the pure butter-fat, but when taken with the cheese they live on it and change the butter into acids, which are set free. It is the butyric acid which gives the peculiar odor to rancid butter. To keep the microbes from working you must keep the butter cold or render it. Oleomargarin does not become rancid.

Give the proper method for boiling and opening a lobster. Plunge the lobster head downward into a vessel of warm—not boiling—water to which has been added one tablespoonful of salt. Cover the vessel closely and boil from thirty to forty-five minutes, according to the size of the lobster. When done and cold twist the tail from the body, and also twist off the claws. Shake out the liver and coral. Remove the stomach from under the head and the vein from

the tail and throw them away, together with the spongy fingers found between the body and shell. The body should be drawn from the shell, split through the center, and the meat picked from the cells. The meat of the tail should be taken from the shell in one piece, and so, also, should that of the claws after the claws have been cracked.

Should lobster be dead or alive before boiling? Alive.

When would you use male and when female lobsters? Use a male lobster for eating in definite pieces, as in salads or cutlets. The female is used in soups and sauces.

In buying boiled lobsters how may you determine whether or not they were alive immediately before boiling? If alive when put in to boil the tail will be stiff and elastic, and if bent it will spring back immediately.

What is the coral of lobster? The ova.

When are lobsters in season? From May to September.

What is a "tomalley?" The liver of the lobster, and it is known by its greenish color.

What is the "lady" of the lobster? The stomach.

Give recipes for common methods of preparing lobsters. For lobster salad arrange the meat of a boiled lobster, when cut in dice-shaped pieces, upon lettuce leaves, garnish with rings of the white of hard-boiled eggs, and serve with a gill of mayonnaise dressing. For lobster cutlets or chops use two cupfuls of boiled lobster, one tablespoonful of chopped parsley, one-fourth of a nutmeg grated, and salt and pepper to taste. Put one cup of cream or milk to heat, and when boiling add one ounce of butter rubbed together with three tablespoonfuls of flour; stir and add the beaten yolks of two eggs and cook it two minutes. Remove from the fire and dd the seasoned lobster. Mix well and spread out on a platter to cool. When cold form in the desired shape and dip in beaten egg, then in bread crumbs, and fry by immersing in heated

oil. In about two minutes they will become a nice brown. Drain and serve on a heated dish, putting the end of a small claw to represent the bone in a chop, and garnish with parsley. Cream or tartare sauce should be served in a boat with them. In preparing lobster à la Newburg, cut the flesh of one boiled lobster into blocks, mash fine the yolks of three hard-boiled eggs and add to them two or three tablespoonfuls of cream. Melt two ounces of butter and add two tablespoonfuls of flour, mixing it smooth; then add the remainder of a half-pint of cream and cook it over the fire till thick; then add the mashed yolks and stir in two more ounces of butter, but do not let it boil. Add one-half teaspoonful of salt, a little cayenne, and then the lobster. Stir until the lobster is heated, then add two tablespoonfuls or one-fourth of a cup of sherry. Many persons prefer lemon juice instead of the sherry. Cream is not so apt to curdle as milk in preparing this dish.

What are crabs? Give methods of boiling and opening. Crabs are one variety of the Decapod division of Crustaceæ and differ from lobsters chiefly in being formed for creeping at the bottom of the sea instead of swimming. To boil them, they should be plunged head first into warm salted water and boiled forty-five minutes. When done and cold twist off the claws and take off the upper shells. Remove the spongy substance and see that the under part is free from sand.

Give recipes for the most common ways of preparing them. Boil as directed above and arrange the meat on a flat dish and garnish with parsley. Each person dresses it with oil, vinegar, salt and pepper to suit himself. In preparing deviled crabs, pick out the meat from one dozen heavy crabs that have been boiled. While one-half pint of cream is heating, rub one ounce of butter with two tablespoonfuls of flour and add to the cream when it boils, letting it cook for two minutes, stirring all the time. Remove from the fire and add the crab-meat, one tablespoonful of chopped

parsley, one-fourth of a nutmeg grated, the finely mashed yolks of four hard-boiled eggs, and salt and cayenne to taste. Mix well, and having cleaned the upper shells, put the mixture on the shells, brush with beaten egg, cover with bread crumbs and fry in heated oil, or else brown in a quick oven.

What are soft-shelled crabs and how are they cooked? Soft-shelled crabs are hard shelled crabs that have recently cast their shells. They are sautéd in butter.

What is the "apron?" The apron is a small loose shell running to a point in the middle of the under shell. The "apron" of the male is long and narrow, while that of the female is much broader and rounder.

What are crayfish? A fresh water species of Crustaceæ resembling the lobster.

What are prawns? Prawns are small Crustaceæ, and are the larger of the two varieties of shrimps or Gulf shrimps.

What is the usual manner of preparing them? Boiled and then used in a salad or sauce.

What are shrimps? What two kinds are usually sold in our markets? Shrimps are of the genus *Crangon*, the smallest of the Cancer tribe, and belong to the Decapod division of Crustaceæ. Gulf and California shrimps are the varieties sold in our markets.

What may be said of canned shrimps? They are very nice, being put in bags so they cannot touch the tin.

Give the method of boiling and opening shrimps. Plunge them head downward in warm water and boil ten minutes. When cold twist the shells of the body and tail apart, leaving the meat in one piece.

Give the best methods of preparing shrimps. Boiled and made in salad, or sauce, or deviled.

What are scallops? How are they sold? What part is used for food? Scallops are marine shell-fish or bivalve mollusk of the genus *Pecten*, and are found in beds beneath deep water. They are sold by the quart and only the muscle is used.

Give the best methods of cooking. They are parboiled, dipped in beaten egg, then in bread crumbs and fried by immersion in heated oil. They are also stewed for five minutes in one pint of boiling milk to which had been added one ounce of butter rubbed together with one tablespoonful of flour and seasoned with salt and pepper. They can also be roasted or baked and pickled.

What are mussels or soft clams? Mussels are marine bivalve shellfish.

At what season are they used? Give the proper methods of opening and cooking. Mussels are in season during the winter. Remove the shells carefully; wash and soak them in cold water for ten or fifteen minutes and then drain them. They are fried and stewed the same as oysters.

What are clams? Clams are salt-water bivalves of the Molluscæ division of shellfish.

What three varieties are in common use? The little neck or sand clams, the quahaugs or mud clams, and the cherry-stone clams.

When are they in season? Almost the whole year. The cherry-stone clams come in as oysters go out.

What may be said of their digestibility? They are hard to digest.

Which variety is best? Little necks.

Give the proper method of opening and the best methods of cooking them. Break a nick in the edge of the shells, pry them open and remove the clam. They are best roasted in their shells, though they can be fried, stewed or pickled the same as oysters. The most common ways are chowder and soup. Little necks are served instead of fresh oysters. Cherry-stones are served raw on the half-shell. Quahaugs are used in chowder and soup.

PLAIN PASTE.—In making plain paste we had every thing as cold as possible. We sifted and then measured out three cups of flour, put it in a large mixing bowl and added to it one teaspoonful of salt and one teaspoonful of sugar. We placed one-half pound of

butter in the center and with a sharp knife cut it into small pieces, and, of course, in so doing mixed it with the flour. We added ice water very gradually, mixing with the knife, and when one portion was moistened we pushed it to one side of the bowl. We were very particular not to moisten any of the flour a second time, but always to stir in a new place. We used nearly one cup of ice water in moistening the whole quantity, and when it had all been moistened we cut and mixed it until it so clung together that we could lift it from the bowl with the knife. We dredged the board lightly with flour, and having place the paste on it, we dredged it with the flour, and then rolled it lightly from us into a long, thin sheet, as we did the puff paste. We folded the sides in, and then the ends, and turned the paste around so the fold ran to and from us and rolled it again; then we folded, turned and rolled it once more; then folded and placed it on a granite pan on the ice till wanted. When it cannot be placed in a refrigerator it should be used at once, as it will not puff up so nicely if it stands in warm or moist air.

Pumpkin Pie.—In making pumpkin pie we pared and cut a pumpkin into pieces about one inch square and put the pieces in a stewpan with a little water, to keep it from burning. When it had stewed until tender we put it through a vegetable press, and to each cup of pumpkin we added a piece of butter as large as a walnut and one-fourth of a teaspoonful of salt; after mixing it we let it stand until cold. When cold we put one pint of pumpkin in a bowl and added one pint of milk, one teaspoonful of ground ginger, one-half teaspoonful of ground mace, one-half teaspoonful of ground cinnamon and sugar to taste, and mixed it well together; after beating four eggs until light we added them to the mixture. When liquor is used a gill of brandy is added. We lined deep pie plates with the plain paste, filled them with this mixture and baked them in a quick oven about thirty minutes. This amount filled four pie plates the size we used.

Apple Pie.—In making apple pie we pared and sliced three large greenings. We lined a tin pie dish with plain paste and filled it with the sliced apples; then sprinkled over them one-fourth of a cup of sugar and one-fourth of a teaspoonful of ground cinnamon, and then added one ounce of butter cut in small pieces and two tablespoonfuls of water. We rolled a piece of paste until it was larger than the top of the pie, and made an opening in the center. We brushed the lower rim back from the edge with cold water, put on the upper crust, and then pressed the two crusts together around next the filling, because if we press the outer edges they will not puff up so nicely. We baked the pie in a quick oven for thirty minutes.

Cranberry Pie.—In making a cranberry pie we lined a pie dish with plain paste and filled it with uncooked cranberries which had been carefully looked over and washed. We added one-half cup of molasses and four tablespoonfuls of sugar, and when we had put on the upper crust we baked it half an hour in a quick oven.

To Serve Boiled Lobster.—In serving boiled lobster, after having boiled it according to the method given in the questions and answers, we arranged the meat in the center of an unheated dish and garnished it with the claws placed among sprigs of parsley, hard-boiled eggs cut in quarters, and fancy shapes cut from pickled beets. Each person was at liberty to add what seasoning he desired.

Stewed Oysters.—In stewing oysters we put fifty oysters in a colander to drain; then put their liquor on to boil and skimmed off all the scum that came to the surface in boiling. We added one pint of milk to the boiled liquor, and having rubbed together one large tablespoonful of butter with one tablespoonful of flour, we added it to the boiling milk and stirred until it began to thicken; then added six whole allspice, one blade of mace and the oysters, which we had washed by pouring cold water over them while in the colander. We stirred continuously until the oysters curled, then added salt and pepper to taste,

and stirred until we were sure all the oysters were heated through.

Fricassee of Oysters.—In preparing a fricassee of oysters we boiled twenty-five oysters in their own liquor and then drained them in a colander. We melted one ounce of butter in a frying pan and added one tablespoonful of flour, mixing it smooth, and then added one-half pint of milk and stirred until it boiled. When the milk had boiled we added the oysters and one-half cupful of the liquor in which they had been boiled, one teaspoonful of salt and one-eighth of a teaspoonful of cayenne, and continued to stir until it boiled again. We removed them from the fire and stirred in the lightly beaten yolks of two eggs and one tablespoonful of finely chopped parsley. It was served at once.

Your affectionate cousin,
Virginia Reed.

LETTER XIX.

January 30, 189–.

My Dear Cousin Aiethea: The title of the professor's last lecture was "Milk."

Milk is not a perfect food because it lacks iron. Milk is a secretion from the milk glands with the fat made from the changes of the lining of the glands. In fine cattle the butter-fat is more like tallow than in the lower grade of cattle. The milk of different animals is different.

The general idea of all forms of milk, and some in particular, may be briefly stated by saying that milk is water containing fat in suspension and certain other substances in solution, but that would not be exact because some are in a jelly-like condition—though an ingredient in such a condition in milk is said to be in a colloid condition.

The globules in milk are the particles of butter fat held in suspension. In standard milk there is eighty-seven per cent. of water and about thirteen per cent. of solid matter. When the per cent. of solid matter falls below twelve, the milk is considered poor; but when the per cent. rises above fourteen the milk is called rich. When the average is thirteen, about four per cent. would be fat, four per cent. sugar, four per cent. proteids and the remaining one per cent. mineral matter. In human milk the fat varies from one and one-half to six or seven per cent., but is usually from two and one-half to three and one-half; sugar six and one-half, the proteids two, and the mineral matter about three-tenths, while the remainder is water.

The great difference between cow's milk and human milk is in the curd. The curd of cow's milk is hard

and firm, while in human milk it is thin and scant; therefore cow's milk should be diluted before being given to young children. Fat exists in milk in an emulsified condition; each globule is separate and stays so unless churned, when they unite and form a solid mass. It is not known yet whether there is a film on the outside of each globule or whether the outside is simply hardened as in starch cells.

The sugar of milk (lactose) is in a state of solution and has nutritive value as food. The proteids are the tissue-forming part of milk. Albumin and globulin are the two proteids which exist in a state of solution, casein is the remaining one and the most abundant, and exists in a colloidal state. The mineral matter is in a state of solution and is the bone-forming part. Colostrum is a milk rich in albumin, but it is a peculiar milk with which we shall have nothing to do.

Milk is a food eminently suitable for microbes. Indeed, it is a good medium for cultivating them. Milk is rich in the ordinary water and air microbes, and it may contain the specific ones of cholera, typhoid fever, tuberculosis, diphtheria and scarlet fever. Ordinary water is rich in microbes; so, also, are meats and fruits, and our systems are fitted to deal with them; but in milk they work on the casein and so develop a virulent poison, such as in ice-cream or in cream puffs. Common water microbes acting on milk for a few hours make it very bad, so that when taken by an infant it would cause fatal results. In summer-time these microbes multiply rapidly, so it is best to keep the milk chilled. The professor uses Arnold's Steam Sterilizer. All milk vessels should be scalded or steamed and dried.

There is rarely a case of true cholera infantum; what is usually so called is inflammation of the intestines caused by the microbes acting in the milk before it was swallowed.

Adulteration is not right, but often the adulteration is the best part. A separator is the best kind of a skimmer for taking out the impurities from milk.

Separator milk looks like rich milk, although only two per cent. of the fat is left. Centrifugal force is used in skimming. Dairymen are now combining to keep milk clean and to exclude all milk from farms where there is sickness of the help.

What are terrapins? Terrapins are reptiles of the genus *Chelonia* and live in water.

How are they sold and when are they in season? They are sold alive, by the inch, seven inches being full size. They are in season from November to March.

What is the difference between diamond-backs and other varieties? Diamond-backs have diamond-shaped markings on the scales of their backs and have black legs. Red-legs have red-colored skin on their legs, while the Juniata have striped legs and are the largest of the three varieties.

What are red-legs? Fresh-water terrapin. The females of the red-legs furnish the best eggs for sauces.

Give the method of boiling and opening a terrapin, and the methods of cooking. Put the terrapin into boiling water and boil ten or fifteen minutes, or until you can take off the skin and claws. When skinned put into fresh, boiling water and add one tablespoon level full of salt. Simmer for about one and a half hours, until you can separate the shells easily and the flesh on the legs is tender. After separating from the shells, turn it on its stomach and take off the sand bags from the back, then turn it over and separate it. The saddle goes with the tail. Pull off the skin from over the eggs and pinch off the bladder carefully down in. Take out the eggs and egg-bag. Pull the egg-bag into small pieces, and also the small intestine. The intestines are called pipes. Pull out the head, throwing the skin away. Throw away the gall-bag, which is in the right side of the liver, and also throw away the stomach and large intestine. The flesh and liver must be broken into small pieces. The Mary-

land and the Philadelphia are the best methods of cooking.

In preparing terrapin according to the Maryland method, if wine is used, the meat is covered with sherry or Madeira and let stand two or three hours, or over night. Break up the shells and add one pint of the liquor in which the terrapin was last boiled, and let it simmer for stock, adding to it one bay leaf, one stalk of celery or one small onion, and two peppercorns. Brown two ounces of butter and add two tablespoonfuls of browned flour; mix smooth and add the pint of stock after it has been strained, stirring constantly. When smooth add the terrapin, season to taste and cut in two more ounces of butter. When the terrapin is heated through it is ready to be served. One terrapin is enough for four persons.

How would you select a chicken? Turkey? Duck? By examining the breast bone, skin and feet.

How can you tell the difference between a young and an old turkey? Duck? Chicken? A young turkey has a short neck, a broad, fat breast and black legs, while an old turkey has a long neck and reddish, rough legs. A young duck has a plump, fat breast, the webbing and lower part of the legs are soft, and the under part of the bill breaks easily, while in an old duck the opposite is the case. In a young chicken the end of the breast bone is cartilaginous, the legs are soft and the skin tender and smooth, while old chickens have spurs and scales on the feet and the end of the breast bone will not bend easily.

Give the proper method of cleaning and trussing poultry and game. Singe, cut off the head, and cut off the feet after removing the tendons. Split the skin on the back of the neck, separate the skin from the neck, removing the crop and windpipe, and then cut off a part of the neck for the giblets. Make a vent under the rump and separate the internal organs from the back, using one finger in doing so, and then take out all the internal organs by taking hold of the gizzard. Carefully cut around the end of the intestine

and remove it all together. Cut out the oil sack. Wash and dry the skin, wiping the inside with a dampened cloth to remove any clots of blood which may have been left. Fold the skin over the neck, place the wings, take a stitch and tie. Push the legs up and stitch through the knee or second joint and tie. Stitch through the end of the legs and the rump and tie. Game has the legs trussed so they stand up when the fowl is placed on its back. Remove the strings before serving.

What are the giblets? How are they cleaned? The giblets consist of the liver, heart, gizzard and neck. The liver is cut away from the gall bag, the heart is cut open to remove the clotted blood, and the outer coat of the gizzard is cut and drawn off, leaving the sand bag unbroken. They are washed well.

Give recipe for roasting and boiling a chicken. After a chicken has been cleaned and trussed, place it on two slices of bacon in the bottom of a baking pan, cover the bottom of the pan with water to which has been added one teaspoonful of salt. Bake it fifteen minutes to the pound, basting it every ten minutes. Serve on a heated dish and garnish with sprigs of parsley. For boiling, the chicken should be drawn, cleaned and trussed the same as for roasting. Dredge with flour, and place in a pot and cover the chicken with boiling water. Put a cover on the pot and let it simmer until tender, which will be two hours if the chicken is not young. Egg or oyster sauce should be served with the chicken.

What is a brown fricassee? White fricassee? A brown fricassee of chicken is made by cutting a chicken into eleven pieces after it has been properly cleaned. Put two ounces of butter in a saucepan, and when a nice brown put in the chicken; when it has browned nicely on both sides add two tablespoonfuls of flour, and when stirred well add one pint of boiling water or stock and stir until it boils. Add one teaspoonful of salt, cover and let it simmer until the chicken is tender, and then add one teaspoonful of onion juice

and a little pepper. In dishing a chicken cut in eleven pieces; the giblets and pieces of the back are placed in the center of the platter, with the two pieces of the breast on top; the second joints are placed on one side, the legs are crossed on the other and one wing at each end of the platter. The sauce is poured over the chicken and chopped parsley sprinkled over all. In a white fricassee, the chicken is cut up as for the brown fricassee, put in a stew kettle, partly covered with boiling water, and covered closely and left to simmer until tender, which will be about one hour if the chicken is young. All the water should be evaporated during the cooking. Make a sauce by melting one large tablespoonful of butter in a frying pan and adding to it two tablespoonfuls of flour; when mixed well add one pint of milk and then turn it into the stew kettle in which the chicken was cooked and stir until it boils, then add salt and pepper to taste. Remove from the fire and stir in the beaten yolk of two eggs and pour it over the chicken, which has been dished the same as a brown fricassee. Sprinkle with finely chopped parsley.

Give recipe for broiling a chicken. Draw and clean the chicken, then split it down the back. Salt and pepper the chicken and put it in a broiler. Place the bone side down over a slow fire and broil for forty-five minutes. Keep it covered with a plate during the broiling and turn and brown the skin side before serving. Baste with butter after it is dished.

What are capons? Male birds of our common fowls which have been deprived of the faculty of procreation.

What is the best method of cooking them? Roasting.

What is a galantine of turkey? A galantine of turkey consists of a boned turkey filled with a boned chicken, which was stuffed with bread crumbs and sausage or finely minced lean ham, then boiled until tender and then browned in the oven. It is served cold with aspic jelly.

What is a salmi of duck? A salmi is a highly seasoned stew or hash served with a sauce to which has been added olives.

How can you distinguish a young from an old goose? Young geese have down on their legs and the legs are soft and yellow. The yellow changes to a reddish color as they grow old.

What are guinea fowls, and how are they best cooked? Guinea fowls are fowls of the genus *Numida meleagris*, and are closely allied to turkeys. They have a gamy flavor and are easily digested. They are best in a fricassee.

What is venison? Venison is the flesh of deer.

What is said of its nutrition and digestibility? It is easy of digestion. It must be used at once or else it must be hung for some time to become tender.

Give three common methods of preparing it. Broiled, roasted and stewed.

Give the proper method of cleaning rabbits, or hares, and the best methods of cooking them. Cut off the head, skin, remove the entrails, wipe them, divide down the back and cut each half into four pieces. They are stewed, broiled, or made in pies.

How may the fishy taste be removed from a wild duck? By rubbing its breast with onion and putting four uncooked cranberries inside.

What varieties are considered best, and how may they be distinguished? Canvas-backs and red-heads are considered best. Canvas-backs have a greenish-black bill, which is longer than the head, and the back and sides are whitish, waved with black, but the white predominates and the black lines are faint and much broken up; while the red-heads have dull-blue bills with a black belt across the end, and the bill is shorter than the head; the back and sides are whitish, waved with black, and the dark waved lines are unbroken.

Name the birds in common use for cooking. Canvas-backs, red-heads, blue-winged teal, black duck, widgeon, wild goose, pigeon, partridge, pheasant,

quail, grouse, prairie fowls, reedbirds, blackbirds, woodcock, snipe and plover.

Describe each and give the best methods of cooking. In birds which use their legs in swimming or scratching the breast is better developed than the legs, which are small, while those flying have the hindquarters better developed. Roast or broil all excepting the pigeon and blackbird, which are best in pies. Woodcock, snipe and plover are roasted undrawn.

Name the nuts in common use. Tell how and where they grow. Hickory nuts, pecans, walnuts, butternuts, chestnuts, almonds, brazil nuts, cocoanuts, pine nuts, pistachio, hazelnuts and peanuts. The hickory nuts, pecans, walnuts, butternuts and chestnuts grow on trees in this country and Europe. Pistachio nuts grow on trees native of Persia and Syria. Almonds grow on small trees native of Syria. Brazil nuts grow on trees native of Brazil. Cocoanuts grow on a variety of palm, originally a native of the Indian coast and South Sea islands. Hazelnuts grow on bushes native of this country and of all the temperate parts of Europe and Asia. Peanuts grow on a leguminous plant, and originally came from South America.

What is said of their nutrition and digestibility? They are very nutritious, but are hard to digest.

What nuts are used for cooking purposes? All.

SPINACH.—In preparing spinach we looked over and cut off the roots from half a peck of spinach, then washed it through several cold waters to free it from grit, and then drained and pressed it so as to remove as much of the water as possible. We put the spinach in a granite kettle, added one cup of cold water, and allowed it to steam for twenty minutes over a moderate fire. We purposely left the kettle uncovered so that the spinach would not become a dingy color. When it had steamed sufficiently we drained all the water off, turned the spinach into a chopping tray and chopped it very fine. We then put

it in a saucepan and added one ounce of butter, salt and pepper to taste, and stirred it until heated through. It can then be served on a heated vegetable dish with slices of hard-boiled eggs arranged on top; but we placed small squares of buttered toast on a heated dish, placed a mound of spinach on each square, and one-half of a hard-boiled egg on the top of each mound; then poured drawn butter around the toast. The mound of spinach had been shaped by packing it tightly in a cup.

DRAWN BUTTER.—In preparing drawn butter we mixed two ounces of butter with one tablespoonful of flour, put it in a double boiler and added gradually one-half pint of boiling water, stirring constantly until it thickened. We removed it from the fire as soon as it thickened, added one half-teaspoonful of salt, and it was ready to be used.

BOILED CAULIFLOWER.—In preparing boiled cauliflower we trimmed off the outer leaves, cut the stem off close to the flowerets, and after washing well let it stand and soak head downward in clear cold water for one hour. We wrapped the head of cauliflower in cheesecloth to keep it from discoloring or breaking, and placed it stem downward in boiling water. We added one teaspoonful of salt and covered the kettle and left it to boil until the cauliflower was tender, about thirty minutes. We took it carefully from the water, and after removing the cloth placed the cauliflower stem downward on a round platter, poured cream sauce over it, and it was ready to be served.

STEWED CABBAGE.—In preparing stewed cabbage we cut a small head of cabbage into two equal parts and soaked it in clear cold water for one hour. After removing the stalk or hard part we chopped the remainder very fine, put it in a stewpan, covered it with boiling water, and let it *simmer uncovered* for twenty minutes. After draining it in a colander we turned it into a heated dish and poured cream sauce over it.

Boiled Asparagus.—In preparing boiled asparagus we washed it in cold water, cut off all the tough portion, and let it stand in cold water for thirty minutes. We then tied it in small bundles and dropped them in a kettle of boiling water; after they had boiled for twenty minutes we added one teaspoonful of salt and left it to boil for ten minutes longer, while we toasted squares of bread from which we had removed the crust. We buttered the toast while hot and placed it on a heated plate. We drained the asparagus, and after removing the strings heaped it up on the toast. We were careful to place the heads all one way. We melted one ounce of butter in a saucepan and added one tablespoonful of flour, and when mixed smooth we added one cup of the liquid in which the asparagus was boiled, stirring constantly, and when it boiled we seasoned it with salt and black pepper and poured it over the asparagus, which was then served.

Your affectionate cousin,
Virginia Reed.

LETTER XX.

February 17, 189–.

My Dear Cousin Alethea: The professor's last lecture was a continuation of the one on "Milk."

Changes take place in milk when it stands. The fat rises, not as butter, because there are other ingredients in the cream, and only about twenty per cent. of butter-fat. Watered milk throws up the cream better even than the pure milk.

Various creamometers have been devised, but all have been unsatisfactory, because the milk depends on too many different things to be the same at all times. When milk is agitated as in churning, the fat globules break up, and being collected together make butter. In the centrifugal machines called separator skimmers, the cream can be collected with ease and rapidity. Almost as rapid and as close a separation can be made in the tall cans when kept at a low temperature. Therefore creameries have sprung up, which has done away with butter making on the farm, and has also led to cheapening the cost. This is not, however, free from objections, because it makes it so much easier to adulterate with oleo-oil, as recent cases have proved.

There is another objection which is serious. A polluted material added to one free from pollution, but capable of supporting the microbes, would develop them very rapidly, as often results when a small amount of sewerage gets into pure water. It is the same when tuberculosis is in the milk of one out of fifty farms, which when mixed with the other milk would spread the disease through the whole. Now all who partake of that cream are exposed, while heretofore only those supplied by that one farm would

have been endangered. In milk the disease germs may not all come from the cattle. The infection may come from the hands and from other animals. Cats and dogs do not usually have tuberculosis, but they convey skin affections and diphtheria.

Milk may have, from the air and water, microbes which, when they get in the milk, become virulent or act on and decompose the milk, making it poisonous. Adults may resist its action, but children cannot always, so sometimes the inflammation of the bowels results in death. Milk is now collected in some places with a great deal of care. The cattle are inspected from month to month, so also are those who take charge of them and the milk, all of which tends to keep the milk pure.

The professor thinks that the announcement by Koch of tuberculin before its time was due to political pressure, and that tuberculin as a detector of germs of tuberculosis in cattle is very good. It is the only sure method of finding out which cattle are diseased and breaking down all that are susceptible. Many whose temperature does not rise succumb later, so by killing all such a stronger race will eventually arise. It will cost a great deal, but it is the best way to protect ourselves.

Cattle have been made weak by cultivating for a great yield of milk and butter-fat, and as in all nature you sacrifice one part in order to gain in another. Though those that are diseased are limited in number, it is safest to depend on heating the milk to kill the germs. In that way the large microbes are killed, and as the others do not grow large for several days, the milk can be kept a few days even in hot weather.

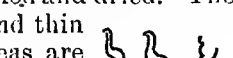
The way to heat it is to put it in a glass vessel and stop the mouth of the vessel with a cotton plug. Subject the vessel to heat at the temperature of from one hundred and sixty to one hundred and sixty-seven degrees for fifteen or twenty minutes and cool quickly. Such heat does not change the milk and only kills the large microbes. By a higher heat or boiling the sugar

in the milk is modified, the albumin, though only one-third of one per cent. present, and that nearly like blood albumin, coagulates; the casein is not changed by heating, still it dries out and floats as scum, and steadily becomes less digestible; the globules of fat become larger by running together, which also makes it harder to digest. This is the condition which exists in condensed milk and evaporated cream. It is not really cream—only unsweetened milk condensed.

Pasteurizing is better because it kills the microbes that are our foes and leaves the friendly ones to help us digest the milk. Pasteurized milk is in some places called modified milk, because it is not heated so much as in sterilizing.

What is tea? Give its chemical composition and active principle. Tea is the dried leaves of a plant of the genus *Thea*, which belongs to the family *Camellia*. Tea contains volatile oil, water, tannin, theine, glutin, fibrin, gum, mineral matter and coloring matter. Its active principle is theine.

Describe its growth. Name and describe each of the different species. It is a shrub growing from three to six feet high. Under cultivation it looks like rows of gooseberry bushes. *Thea viridis* has leaves longer than wide, while the *Thea bohea* has smaller leaves, which are broader in proportion. All are only slightly different varieties of the same shrub, altered in habit and appearance by cultivation, climate and soil. The difference in the teas, as we know them, is due to the way in which they have been handled and dried. The Japan teas are rolled long and thin while the China and India teas are rolled to be rounder and more broken.



Which is more healthful, green or black tea? Why? Black teas are more healthful, because they have been fermented and so lost some of certain properties. Orange Pekoe is the best we find in this country. Of the green teas gunpowder is the best imported into this country.

Give recipe for making tea. Pour boiling water

into an earthen pot and stand it on the back part of the stove for ten minutes and then pour out the water. Put the tea in the pot, allowing one teaspoonful of tea for each cup of water, and pour on one-half of the water, which should be soft and freshly boiled. Let it draw for five minutes on the back of the stove. Add the remainder of the water and serve at once.

Why should tea always be made in an earthen vessel? So that the acid of the tea might not act upon the metal of the pot, thereby making unhealthful combinations.

Why should it not be boiled? Boiling extracts more of the tannic acid, which we do not want, and the characteristic flavor of tea being volatile is driven off in the steam.

Name the different kinds of coffee, and describe each species. Mocha, Java and Rio. Mocha has small round grains of a dark greenish yellow. Java has large flat grains of a pale yellow color, while Rio is between the two in size.

Tell where and how it grows. Coffee grows in Arabia, Abyssinia, Egypt, West Indies, Peru, Brazil, Java, Ceylon, and other warm countries. It is the seed of a berry which grows on a small tree, *Coffea arabica*, of the *Rubiaceæ* family.

Give its chemical composition and active principle. Coffee contains caffeine, legumin, gum and sugar, caffeo-tannic and caffeic acids, essential oil and volatile oil, woody fibre, mineral matter and water. Its active principle is caffeine.

Give the best method of making coffee. Use soft water when it first boils. Stand the pot on the back of the stove and have the finely ground coffee in the biggin in the pot, allowing one tablespoonful of the coffee to each cup of water. Pour on the boiling water and when it has drained through add more, until you have obtained the desired quantity, then serve at once.

Why should it not be boiled? Are coffee and tea infusions or decoctions? Why? Coffee should not be

boiled, because that brings out the astringent principle and drives off the aroma in the volatile oil. Tea and coffee are infusions, because boiling is required to make a decoction.

Which is the more healthful, tea or coffee? Most authorities say coffee is the more healthful.

What is chicory and its uses? How do chicory and coffee differ in chemical composition? Chicory is a plant of the genus *Cichorium Intybus*, of the composite family, and its long root is sliced, dried and roasted and used as a substitute for coffee. A little chicory gives the color and bitter taste to boiling water, the same as a large amount of coffee, and it contains a volatile oil, but in all other respects they are different.

What is cocoa? Tell where and how it grows. Cocoa is a preparation made from the seeds of the *Theobroma cacao*. The seeds are arranged in rows in fruit having somewhat the outline of a pointed ellipse. The tree on which they grow is a native of tropical America.

What is chocolate? Broma? Racahout? Alkathrepta? Chocolate is the cacao bean or seed roasted, ground with cinnamon, sugar and vanilla and made into cakes. Broma is chocolate deprived of the fixed oil and left in a powder. Alkathrepta is cocoa that has been deprived of the oil and had some sugar added. Racahout is a food made from cocoa to which has been added sugar, salep, vanilla, arrowroot and rice flour.

Give their chemical composition. Water, starch, gum, tannin, glutin, oil, coloring matter, mineral matter, fibre and theobromine.

What is the active principle of cocoa? Theobromine.

What is the best method of preparing each? Boiled with water for a drink or with milk for a food.

What is tapioca? Arrowroot? Sago? Tapioca and cassava are made from the tuberous roots of *Manihot utilissima* of the order *Euphorbiaceæ*. The best arrowroot is from the West Indies and is made

from the roots of *Maranta arundinacea.* Sago is made from the pith of the sago palm. All are nutritive starches used for food.

To what class of food do they belong? Carbonaceous.

Name the different kinds of arrowroots. Which is best? Brazilian arrowroot is made from tapioca meal or cassava. East Indian arrowroot is made from *Curcuma augustifolia*, a species of turmeric plant. English arrowroot is made from the potato. Tonsles-mois is made from the tuberous roots of the *Canna edulis.* Portland arrowroot is made from *Arum maculatum.* Tahitan arrowroot or Tacca starch, also sometimes called Otaheite salep, is made from the root of the *Tacca oceanica.* The best arrowroot of all is the Bermuda, which is a West Indian arrowroot obtained from the tuberous roots of the *Maranta arundinaceæ.*

Why called arrowroot? Because the Indians used the root of a variety of the Maranta plant as an antidote to the poison on their enemies' arrows.

What is cornstarch? What are its uses? Cornstarch is the starch derived from maize. It is used to thicken puddings and sauces.

How many tablespoonfuls of pure cornstarch will thicken a pint of milk for puddings? Four level tablespoonfuls.

Give recipe for blanc mange. Chocolate pudding. Put one quart of milk in a farina boiler on the stove. Moisten eight level tablespoonfuls of cornstarch with a little cold milk, add it to the steaming hot milk and stir until it thickens. Add one-half cup of sugar and one-fourth of a teaspoonful of salt. When it has thickened pour into custard cups and stand away to cool and harden. Serve with cream. In making chocolate pudding, melt two ounces of chocolate, stirring it until smooth. Put one pint of milk on in a farina boiler, and when steaming add four level tablespoonfuls of cornstarch, which have been moistened with one-fourth of a cup of cold water, and stir until

thick and smooth, then add the stiffly beaten whites of four eggs and one-half cup of sugar. Beat well together and add one teaspoonful of vanilla. To one-third of this mixture add the chocolate and stir well. Put one-half of the white mixture into a plain mould that has been rinsed in ice water, then pour in all containing the chocolate and then the remainder of the white. Stand it on ice until it stiffens, which will be in about three hours. Turn from the mould and serve with vanilla sauce poured around it.

What is Irish moss? Iceland moss? Irish moss or carrageen is a seaweed of the genus *Chrondus crispus.* Iceland moss is a lichen of the genus *Cetraria islandica.*

Give the chemical composition and their uses. Irish moss contains water, nitrogenous matter, mucilage, cellulose, mineral matter, iodine and sulphur, while the Iceland moss contains water, nitrogenous matter, lichenin which resembles starch, lichen acids, cellulose and mineral matter. They are used as food, Irish moss being especially good on account of its soothing effect on the mucous membrane.

Baked Macaroni.—In preparing macaroni for baking we broke one-fourth of a pound of Italian or brownish-colored macaroni into convenient lengths and put it in a two-quart kettle containing three pints of boiling water; after adding one teaspoonful of salt we allowed it to boil rapidly, so the macaroni would be kept from sticking together. When it had boiled twenty-five minutes we drained it, poured cold water on it, and let it stand ten minutes, so as to blanch it. We drained it in a colander while we grated one-fourth of a pound of cheese. We spread a layer of macaroni over the bottom of a baking dish, then a layer of grated cheese, and sprinkled it lightly with salt and pepper; then another layer of macaroni and cheese, and so on until all the cheese and macaroni had been used, being particular to have the last layer macaroni. We cut into small pieces one ounce of butter and scattered it over the top; then poured on

one-half cup of cream and baked it till a golden brown, which would require about twenty minutes in a moderate oven. It was served in the dish in which it was baked.

Cream Macaroni.—In preparing cream macaroni we took one-half pound of spaghetti, which is a delicate form of macaroni, and without breaking the sticks put one end of them down in a kettle well-filled with boiling salted water; as the spaghetti softened we pushed them further in the water, and at the same time gave it a round and round motion, so it would not all be in one bunch. We allowed it to boil rapidly for twenty minutes, then turned it into a colander to drain, poured cold water on it to blanch it, and then arranged it in a three-pint baking dish. In making the cream gravy to pour over the macaroni, we put three cupfuls of milk on in a double boiler. We mixed three tablespoonfuls of flour with three tablespoonfuls of butter and stirred it into the steaming milk, and continued to stir until it thickened, and then stirred in three tablespoonfuls of strong cheese (Parmesan is the best). We poured the gravy over the macaroni in the baking dish, sprinkled over the top more of the grated cheese, and put it in the oven to brown. If for any reason the macaroni could not be served as soon as browned, do not add the cheese to the gravy, but keep the gravy in good condition by standing it in a covered vessel in a pan of hot water, and put them together just before putting in the oven, because the gravy will curdle when kept long on the macaroni.

Cheese Ramakins.—In preparing cheese ramakins we put one-half cupful of milk and two ounces of bread on to boil, and when we had stirred it smooth and it had boiled, we added two ounces of butter and four tablespoonfuls of grated cheese. We stirred until all was well blended and then removed it from the fire and stirred into it one-third of a teaspoonful of ground mustard, salt and cayenne to taste, and the beaten yolks of two eggs. We then added very care-

fully the whites of three eggs, which had been beaten until very stiff, and then poured it into a well-greased baking dish and baked it in a quick oven for fifteen minutes.

WELSH RAREBIT.—In preparing a Welsh rarebit we first toasted squares of bread from which the crust had been cut, and buttered them while hot; then dipped them quickly into hot water and put them on a heated dish in the oven, so they would keep warm until wanted. We put one-half cupful of milk in a granite saucepan, and when boiling we stirred in two cupfuls of grated cheese and stirred constantly until the cheese melted; we then added salt and cayenne to taste and the beaten yolks of two eggs, and when well blended we poured it over the toasted bread. Old English dairy cheese is the best for this dish, because when cheese is not rich enough to melt, the rarebit will be tough and stringy.

Your affectionate cousin,
VIRGINIA REED.

LETTER XXI.

February 28, 189–.

My Dear Cousin Alethea: Still the order of lecture, questions and cooking continues, but we have counted the weeks and are beginning to realize that it will not be long until we shall finish the course prescribed. The professor's last lecture was on "Proteids."

Much has been written about proteids, but, in fact, we know little about them. All forms of proteids contain nitrogen. Modern science looks on all life action as chemical effect. Nitrogen is in the tissues, so now they are trying to find out if we can use that from the atmosphere, because four-fifths of the atmosphere is nitrogen, and if it could be so utilized it would lessen the cost of living. The primary means of supply has been obtained from the land, so that agriculture was the first form of labor, or it was obtained from animals and thus indirectly from the land. It is only a limited period since we have learned the relation between plants and animal life.

Proteids are very complex in their elements, and contain carbon, hydrogen, nitrogen, oxygen, sulfur and phosphorus, and are capable of existing in soluble and in insoluble conditions. The condition under which the different proteids become insoluble differs with the different ones; for instance, the albumin of egg, one of the most common of the proteids, is rendered insoluble by heat. Albumin though coagulated by heat is also coagulated by many acids, but not by all acids. Nitric, picric or strong acetic acids renders the albumin insoluble, so these acids would also be destructive to all life or bodies containing albumin; hence they are employed as antiseptics. Corrosive sublimate and zinc chloride are also very

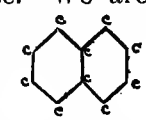
strong and coagulate albumin and fibrin. They are pumped through bodies which are to be kept for weeks, and preserve them, so that when a person dissects them they will not be poisoned.

It has been found that albumin does not coagulate when an alkali is present. The coagulation of casein is different from that of albumin. In milk the casein evaporates from the surface—drys up and forms the scum when the milk has been heated sufficiently. This is not true coagulation. Any strong acid will make milk coagulate. There is one-third of one per cent. of albumin in milk and four per cent. of casein.

The souring of milk is caused by the sugar being changed to lactic acid by a ferment. This ferment is secreted by a microbe and causes the sugar ($C_{12}H_{22}O_{11}$) to be brought into closer union with water (H_2O) than any other means is capable of doing, and this compound is equal to four particles of lactic acid ($C_3H_6O_3$). This change is really a digestion, though a strong acid can also coagulate the milk. Rennet is different and acts on the casein itself, and when added to the casein, calcium phosphates and acid dissolves out the calcium phosphate, which falls as a precipitate. Casein is in milk in a jelly form. It is possible that casein is by itself insoluble in water. Fat is in suspension in milk.

All proteids have a preliminary stage to pass through before we can get it out, and the producer of the casein is called caseinogen, and the one that brings out the fibrin, the fibrinogen. When albumin, fibrin and casein are placed in contact with pepsin and hydrochloric acid they are rendered soluble—they will disappear and the liquid will become clear. The pepsin has transformed or digested the albumin, fibrin and casein, and after they have become soluble they will not return to their original forms. All this takes place by the taking up of water and is called hydrolysis. The intermediate stages through which the albumin passes to became a peptone are called albumoses or proteoses. Starch under the influence of diastase becomes converted into maltose, but between the time

of its being starch and becoming maltose it is changed into an imperfect dextrin and glucose. It is known that the action of pepsin is very limited, so stomach digestion is incomplete. The pancreatic digestion is much more active, and unless checked it will cause putrefaction. Digestion is influenced by the action of liquids. Pepsin requires an acid and pancreatin requires an alkali; diastase requires neither. There are ferments more active than those in our bodies. Bromelin in the pineapple is one of these. We are yet ignorant of the exact arrangement of these particles. Carbon atoms are arranged in strings or chains. Coal oil is in an open chain. Coal tar is in a closed chain.



Carbolic acid is a constant production from proteids. Irregular putrefaction can be told by the carbolic acid sent forth by the kidneys. It is an excretion from a microbe, and since a microbe cannot live in its own excretion it kills that microbe and is used as an antiseptic to kill other microbes.

What is sugar? Give adulterations. Sugar is the sweetening principle found in the vegetable kingdom. It is called lactose when from the animal kingdom. The two main varieties are cane sugar and grape sugar. Cane sugar is sometimes adulterated with beet sugar and glucose.

How can you tell grape from cane sugar? Cane sugar is much the sweeter, and water will dissolve three times as much cane sugar as it will grape sugar. Chemically grape sugar is composed of $C_6H_{12}O_6$ while $C_{12}H_{22}O_{11}$ represents the elements in cane sugar.

What is maple sugar? Sugar made from the sap of the sugar or hard maple tree, *Acer saccharinum* of the *Sapidaceæ* order.

What is caramel? Caramel is sugar that has been subjected to such a high heat that it has browned until it has lost its sweet principle and become bitter.

Name the different kinds of sugar and tell their uses. Cane sugar, maple sugar, milk sugar or lactose,

beet sugar, Mexican sugar made from Indian corn, sugar made from the sugar cane of the North or *Sorghum saccharatum*, and jaggery made from the sap of various trees of the palm tribe. All are used in preparing food.

How do you clarify sugar? Boil the sugar and water and add a little cold water, with the crushed shell and slightly beaten white of egg, and when it boils again skim and then strain carefully through a woolen bag.

What is honey? Syrup? Molasses? Honey is the nectar gathered by bees from flowers, and partly digested by the bee and deposited in combs. Manufacturers also make it from glucose and glycerol. Syrup is the liquid that has drained from refined sugar and then been reboiled and filtered. Molasses is the drainings from raw sugar.

What kinds of molasses are best for cooking purposes? Porto Rico or West India and New Orleans are the best. Porto Rico is the darkest and contains the most acid of all the kinds of molasses. It has a slight flavor of liquorice. New Orleans is lighter colored though still dark.

Is sugar a preserver? In large quantities it is, because when made dense the microbes cannot enter it.

What is the best method of determining the density of sugar? By using an instrument called a saccharometer, though the common way is to test the boiling liquid as in making candy.

Can candy be made from uncooked sugar? Yes, by using powdered sugar and the whites of eggs.

What is salt? What is its chemical composition? Salt is a mineral, and being sodium chloride it contains both sodium and chlorine.

What are condiments? Condiments are various articles used to make food more palatable or wholesome. Salt, pepper, spices and herbs are the most common condiments. Condiments are used as preservatives of food in hot countries.

How many kinds of pepper are used? Two true peppers, the black and the long and the capsicums.

What is white pepper? Black? Cayenne? Bird? White pepper is the black pepper deprived of its outer covering. Black pepper is the dried berries of a climbing plant, *Piper nigrum*, native of the East Indies. Cayenne is a capsicum of the order *Solanaceæ*. Bird pepper is of another genus called *Capsicum baccatum*.

What are peppercorns? Peppercorns are the whole berries of the pepper plant dried and kept unground.

To what family does cayenne belong? *Solanaceæ* or Nightshade family. The best comes from the West Indies.

Which nutmegs are best? Those which contain the most oil.

What are nutmegs? Tell where and how they grow. Nutmegs are seeds of a variety of *Myristica*, an evergreen tree native of the Spice Islands. There are thirty-six varieties of the wild nutmegs.

Why are nutmegs limed before exporting? Nutmegs are limed in order to keep away insects and to destroy the power of vegetating.

What is mace? Mace is the aril of the nutmeg, that is a membranous covering which surrounds the nutmeg.

What is curry powder? Curry powder is a condiment composed of various strong spices, of which turmeric and fenugreek predominate.

What are coriander seeds? Cumin seeds? Fennel seeds? Anise seeds? Coriander seeds are spherical light brown seeds of the genus *Coriandrum sativum* of the Parsley family. Fennel seeds are dark-colored, about one-fourth of an inch long, and slender, of the genus *Fœniculum vulgare*, and are also of the Parsley family or *Umbelliferæ*. Cumin seeds are seeds from a dwarf umbelliferous plant somewhat resembling fennel, and have a bitterish, warm taste. Anise seeds are oblong swelling seeds having a pleasant, warm taste, and are of the genus *Pimpinella anisum*, which is also an umbelliferous plant.

What is turmeric? Turmeric is the root or root-stock of an East India plant of the genus *Curcuma longa*. The root is grayish on the outside, but internally it is a deep yellow or saffron color, and has a slight aromatic smell, and a bitterish, slightly acrid taste.

It is the turmeric in the curry powder that works on the liver.

What are cloves? Describe the structure of the clove. Cloves are the dried calyx and unexpanded flower buds of the genus *Caryophyllus*, an evergreen tree belonging to the Myrtle order. It is native of the Spice Islands.

What is allspice? By what other name is it known? Allspice is a small dry berry, the fruit of the genus *Pimenta*, an evergreen tree of the Myrtle order. It is sometimes called pimento. The best comes from Jamaica.

What gives the grains their shriveled appearance? The shriveled appearance is caused by drying. The best are picked so green that they do not shrivel.

PLAIN OMELET.—In making a plain omelet we selected a sheet-iron pan having a diameter of about eight inches, and to make sure the bottom was as smooth as it could be, we scoured it with a piece of paper and common salt and then wiped it out, but did not wash it. We broke four or six eggs in one bowl and gave the eggs from twelve to fifteen good beats, using a fork so the eggs were mixed together, but not frothy or light. We then added one tablespoonful of boiling water to each egg and gave them a few more strokes to mix the water through them, and then added a piece of butter about as large as a hickory nut. We put the remainder of an ounce of butter in the frying pan, and when it had melted, but *not* browned, we poured in the eggs, and shook the pan constantly with the left hand, and with a spatula in the right hand we lifted the edge of the omelet as the eggs began to solidify, and let the liquid portion run

under. We continued to lift first one part of the edge and then another until all the omelet was set. We dusted it quickly with salt and pepper and then rolled the omelet over from the handle of the pan to the opposite side, making the omelet semicircular in outline, and while holding the omelet in place with the spatula we with the left hand inverted the pan over a heated dish; after removing the spatula the omelet was ready to be served immediately.

We were told never to use milk in an omelet, as milk would cause it to be tough; neither should we allow it to become darker than a golden brown, as that spoiled the flavor of the eggs.

Spanish Omelet.—In making a Spanish omelet we cut one-fourth of a pound of bacon into very small pieces and fried them; that is, panned them until brown, and then added one medium-sized tomato, one small onion and five mushrooms chopped fine, and stirred and allowed all to cook for fifteen minutes. We broke six eggs in a bowl, gave them twelve beats to mix them, and added three tablespoonfuls of water. Having melted a piece of butter as large as a walnut in a frying pan we tilted the pan one way and another so the bottom and sides of the pan were well greased; then poured in the six eggs and shook the pan and lifted the edge of the omelet the same as in making the plain omelet. When the omelet was set, we poured the tomato and other ingredients from the other frying pan over the omelet, folded it the same as we did the plain omelet, and turned it at once on to a heated platter. Omelets must be served immediately, as they are not so nice if they stand even but a few minutes.

Deviled Eggs.—In preparing deviled eggs we covered twelve eggs with warm water and boiled them fifteen minutes, after which we placed them in cold water for thirty minutes in order to prevent them from becoming discolored. After removing the shells we cut the eggs lengthwise into two equal parts and removed the yolks without breaking the whites. We

rubbed the yolks smooth and mixed with them one large teaspoonful of French mustard, one tablespoonful of olive oil, and then added two heaping tablespoonfuls of cold boiled ham or tongue finely chopped, and salt and cayenne to taste. We filled the whites with this mixture and pressed the corresponding halves together. We fringed the opposite ends of six-inch squares of white tissue paper and rolled one egg in each square and twisted the fringed ends the same as in candied secrets. They are very attractive at a picnic or garden party, served on a napkin in a dainty basket garnished with smilax or myrtle. We might have arranged the halves when filled on a bed of cress or salad and so served them.

Beauregard Eggs.—In preparing Beauregard eggs we covered five eggs with boiling water, and after boiling them twenty minutes we removed the shells, chopped the whites fine, and run the yolks through the vegetable press, being careful not to mix the whites with the yolks. We put one-half pint of milk on to heat and rubbed one tablespoonful of cornstarch with a piece of butter as large as a walnut and added to the steaming milk, and then added the whites of the eggs and salt and pepper to taste. We toasted five squares of bread, which we placed on a heated dish and covered each piece with a layer of the white sauce, then a layer of the yolks, and then the rest of the white sauce, and on that the remainder of the yolks. We sprinkled the top lightly with salt and pepper and heated it in the oven a minute or two before serving.

Omelet Soufflé.—The very first thing we did in preparing an omelet soufflé was to brush a quart baking dish with butter and then to examine the oven to be sure it was hot. We then beat the whites of six eggs to a *very* stiff froth, and after beating the yolks of three eggs we added the yolks to the whites, and then added three tablespoonfuls of powdered sugar and the juice of one-half of a lemon; after stirring carefully we quickly turned it into the baking dish

and dredged it with powdered sugar. We allowed it to bake until a golden brown—about fifteen minutes. It must be served *at once* in the dish or paper cases in which it was baked, as the least draught of cold air will cause it to fall.

Your affectionate cousin,
VIRGINIA REED.

LETTER XXII.

March 22, 189–.

MY DEAR COUSIN ALETHEA: The professor gave us another lecture on "Proteids."

Dr. Chittenden is the American authority on Proteids.

Proteids are the nitrogenous food that goes to the building up of tissues in animals. Plants take their food in the form of nitrates. For plant crops you stimulate by top-dressing, which acts like a predigested food would on us—gives quick returns. The work of making nitrates for plants is done by the microbes. Between the dead animal and living plant comes the microbes which feed directly on nitrogen.

Nitrogenous food makes tissue. The proteids comprise globulin, coagulated albumin, coloring matter of the blood, mucin, a tough substance in mucus. The nucleins contain phosphorus. There is also a nuclein in yeast. There is another group of proteids called collogins or glue formers. They are similar to the albumins, but are not nourishing, and are not subject to the same laws as blood, though they are interesting on account of their chemical composition.

The proteids comprise albumin, found in blood, milk, eggs and plants; vitellin, found in yolk of egg and squash; myosin, in muscles; zein, in corn; nuclein, found in brain corpuscles and yeast; also casein or calcium phosphate in milk, and elastin from the neck band of the ox.

The proteids are transformed under the influence of ferments by the taking up of water. A proteid having taken up water splits. In the solution of a proteid in water the particles are not so close as when a ferment acts on them and brings them together;

then they split and become new substances. This taking up of water is called hydrolysis, and the splitting is called cleavage. Whenever a ferment has produced cleavage it slips away from that part and is ready to attack another.

Stomach indigestion is not the same as intestinal. Starch is acted on by the ferment, ptyalin, in the saliva. The digestive fluid of the stomach is acid, but not decidedly so until after digestion has commenced —sometimes not for thirty minutes, so starch has a chance to become digested.

Lactic acid not resulting from the food, but as secreted by the stomach, is an indication of cancer of the stomach. The Ewald "trial-meal," for detecting lactic acid in the stomach, consists of a Vienna roll and weak tea. This would cause lactic acid, so is no test of cancer.

The stomach digestion is preparatory, while the intestinal is thorough. After starch is converted into maltose and passes through the wall of the digestive tract, it goes back to dextrose, not the same as it was, but another. There are six forms of dextrose. There are ten forms of glucose and thirty forms of sugar known.

After proteids are converted into peptones, and are absorbed by the lacteals, the same as the sugar, they are changed into albumin.

The liver is a filter to cleanse the blood, but cannot take out everything.

Hydrochloric is the acid of the stomach, and when it is deficient, substances rot and cause headache and eructation.

Acetic, lactic and butyric acids are only formed from food during digestion. These acids are sometimes formed there by microbes, but in other cases they are not so formed.

What is cinnamon? How is it prepared? Cinnamon is the dried inner or true bark of a small evergreen

tree of the Laurel family, native of Ceylon. The bark is stripped from two-year-old shoots and slightly fermented and then dried. Cassia buds are the unexpanded flower buds of the cinnamon laurel, and are thought to retain the flavor better than cinnamon when heated. There is also another variety of the laurel whose bark, when treated as cinnamon, retains the strength of the cinnamon flavor longer than the true cinnamon, and is called cassia.

Where is it principally cultivated? In the East Indies and China.

What other spice is usually mixed with cinnamon before exportation? Black pepper.

What is ginger! Where and how does it grow? Ginger is the rhizome of *Zinziber officinalis*, a reedlike plant now grown in the East and West Indies and Africa. Fresh or green ginger consists of the young shoots of the rhizome, which are scraped and boiled in a syrup.

What is Jamaica ginger? Jamaica ginger is ginger from Jamaica, and is considered the best. When prepared for medicine, an extract is made from the whole root which makes it dark colored, and alcohol is added. The best ground ginger is made from the center of the root or rhizome, after the outside has been scraped off; it is then washed and dried, which causes the ground ginger to be light-colored.

What are its principal uses? Ginger is used principally in medicine and as a flavorer in cooking.

What are mustard seeds? Seeds obtained from *Brassica alba* and *Brassica nigra*, members of the Mustard family, which are found growing wild in many parts of this country and Europe.

What is the difference between brown and white mustard? Brown mustard is the seed of the *Brassica nigra*, which have a more pungent taste and are much smaller than the seeds of the white mustard or *Brassica alba*.

What is mustard flour, and what are its principal uses? Mustard flour is obtained by grinding the

black and white mustard seeds. It is used as a condiment, and also as a medicine.

What are hops? For what are they used? Hops are the strobiles of the *Humulus lupulus*, a genus of the Nettle family. Hops abound in a bitter principle, and also contain an astringent principle, and are used in brewing. Young shoots or buds of hops are used like asparagus.

What is the difference between isinglass and gelatin? Isinglass is made from the swimming bladder of fish, usually of the sturgeon. Gelatin is made from the bones, skin and tendons of animals.

What is glycerin? Glycerin is an alcohol, a colorless, viscid liquid, whose solvent power ranges next to water. It has a sweet taste and absorbs water from the air, but does not exist in fats, though it is obtained from their decomposition.

What is potato starch? Flour? Potato flour or starch is the starch obtained from the potato.

What is oat-flour? Oat-flour is obtained by grinding the seeds of the *Avena sativa* after they have been deprived of their husk or outer skin. It is not so white as wheaten flour and tastes at first sweet and then rough and somewhat bitter.

How many tablespoonfuls of wheaten flour will thicken a pint of milk for sauce? Two.

How do you make French salad dressing? French salad dressing is made by shaking in a jar until properly emulsified three tablespoonfuls of olive oil with one tablespoonful of vinegar, one-half teaspoonful of salt and one-fourth teaspoonful of black pepper.

What is mayonnaise? Mayonnaise is a dressing for salads. The general rule is to serve mayonnaise dressing with chicken and fish salads and French dressing with vegetable salads.

How do you pull candy? After the candy has been boiled and cooled somewhat by being poured on a marble slab or platter, take the candy in the hands and throw it over a hook and pull, continuing so to do until the candy appears creamy. The hands must be

well oiled before beginning or they will blister in holding on to the candy while pulling.

How do you thaw meat or poultry? Place the meat or poultry in a moderate temperature, say 40° or 50°. After being thawed it must be cooked soon, as it is liable to spoil easily.

How do you use a salamander? A salamander looks like a lid with a long handle. Heat the round or lid part until red-hot, then hold it over whatever you are preparing until it is browned the shade desired.

What is gumbo fillet powder? It is a powder made from the finely pulverized leaves of *Sassafras officinale* of the Laurel family, which have been gathered and dried while very young and tender.

What is vanilla, and for what used? Vanilla is a preparation made from the seeds of an orchid called *Vanilla planifolia*, indigenous to tropical America. It is used to impart flavor.

How do you make vanilla sugar? Pulverize one ounce of vanilla beans with one pound of granulated sugar. Sift through a hair sieve and keep in a closely fastened glass jar.

How do you make a jelly bag? Fold a square of flannel diagonally through the center and sew firmly, felling it from one acute angle to the right-angled corner—that is, where the two square corners come together. The top should be bound or hemmed, and two or three loops attached to it, so it can be hung up.

What is a pastry bag? What are its uses? A pastry bag is made of a piece of strong muslin twelve inches square, having the same shape as a jelly bag. The point of the bag is cut off so a pastry tube will fit in it. The bag is used to hold paste so it can be forced out in whatever shape desired.

How do you whip cream? Chill the cream and turn it into a thoroughly chilled small crank churn; turn the crank, and in a very few minutes the cream will be perfectly whipped. If no churn is at hand,

stand the vessel containing the chilled cream in a vessel of ice water and whip the cream with two forks, placing one fork on each side of the middle finger of the right hand, using the same motion as in whipping the whites of eggs.

New Century Pudding.—In preparing a New Century pudding we shredded and chopped fine one cup of suet, stoned one cup of raisins, and looked over one cup of Purity washed currants. We beat the yolks of two eggs, the cup of suet and one cup of sugar until light, and then added one cup of milk and three cupfuls of flour, and beat all until smooth; then we added one teaspoonful of cinnamon, one-half teaspoonful of salt and the well-beaten whites of two eggs. We added one teaspoonful of baking powder, and after mixing well we added the cup of currants and the cup of raisins, which had been well floured, and when the fruit was stirred through we turned the batter into a well-oiled mould, and put its lid on and boiled it constantly for three hours. In boiling puddings, if the water boils away—evaporates—add more boiling water. The pudding was turned from the mould and served hot with hard sauce.

Hard Sauce.—In making hard sauce we beat two ounces of butter to a cream and gradually added one cup of powdered sugar, and after beating until very light we added the white of one egg; when we had beaten all until light we added the white of another egg and beat again until all was very light and frothy, then we added one teaspoonful of vanilla, or gradually added one tablespoonful of brandy. After beating again we heaped the sauce on a small dish, sprinkled grated nutmeg over it and put on the ice to harden. When hard it was ready to be used.

Batter Pudding with Cherries.—In making batter pudding with cherries we beat three eggs, without separating, until light; then added one pint of milk and three and one-half cupfuls of flour, and beat until smooth. After which we added one tablespoonful of

melted butter, one half teaspoonful of salt and two teaspoonfuls of baking powder. We drained the juice from one pint of stoned cherries, and after dredging them with flour stirred them into the batter, which was then ready to be turned into a well-oiled pudding mould. After putting on the cover, the mould was placed in a pot of boiling water and boiled steadily for three hours. This pudding was served with Fairy butter.

Fairy or Nun's Butter.—Fairy or Nun's butter is made the same as hard sauce, only instead of using one tablespoonful of brandy for flavoring, one tablespoonful of sherry is used.

Wafer Pudding.—In making Wafer pudding we put one pint of milk on in a double boiler, and when steaming hot we added one-half pound of butter and stirred until it was dissolved, and then added at once one-half pint of flour, and stirred it well for five minutes. We removed it from the fire, and when cool added to it the yolks of seven eggs and the whites of four eggs which had been beaten together until very light, and then beat the mixture ten minutes longer. We covered it and kept it in a warm place one hour. We then put one tablespoonful of the mixture into each of the well-oiled gem pans or muffin rings and baked them in a quick oven forty minutes. They were served hot with Foamy sauce.

Foamy Sauce.—In making Foamy sauce we beat two ounces of butter to a cream and gradually added one cup of powdered sugar and continued to beat it until white, when we added the unbeaten white of one egg; after beating well we added the unbeaten white of another egg and beat again until all was very light. Immediately before serving we added one gill of sherry or one teaspoonful of vanilla for flavoring; then added one gill of boiling water and placed the vessel containing the sauce in another containing boiling water over the fire and stirred the sauce until frothy, but no longer. The sauce was served at once, as it soon loses its lightness.

Apple Sponge.—In preparing Apple Sponge we covered one-half of a box of gelatin with cold water and left it to soak while we pared, cored and sliced one pound of apples. We poured one half pint of boiling water on one pound of sugar, and when they had boiled until clear (we had removed all the scum as it came to the top) we added the apples. When the apples had cooked until tender we added the gelatin to them and pressed them through a sieve, added the grated rind of one lemon and the juice of two lemons, and stirred until cold and slightly thickened. We beat the whites of three eggs until very stiff, stirred them into the thickened apples and continued to beat until the sponge had thickened so it retained the impression of the beater; then we turned it into a mould which had been thoroughly chilled by holding ice water and stood it in a cold place to stiffen. Apple sponge was served in a dessert-dish with vanilla sauce poured around it.

Vanilla Sauce.—In making Vanilla sauce we put one pint of milk on in a double boiler, and when steaming hot we added the yolks of four eggs which had been beaten very light with two tablespoonfuls of sugar, and then stirred it two minutes. We removed it from the fire and added one teaspoonful of vanilla, and when cold it was ready to be used.

Peach Sponge.—Peach Sponge also is very good. It is made the same as the Apple Sponge, only one pound of peaches is used instead of the one pound of apples.

Coffee Bavarian Cream.—In preparing Coffee Bavarian Cream we covered one-half box of gelatin with cold water, and after it had soaked one-half hour we poured over it one cup of strong boiling coffee, which had been made from three tablespoonfuls of ground coffee and three-fourths of a pint of boiling water. We added one cupful of sugar and stirred until it was dissolved, and then poured it through a sieve into a tin vessel. While it was cooling we whipped one pint of cream. When cool we added

one-half pint of milk, one teaspoonful of vanilla and the whipped cream, and stirred carefully until thoroughly mixed; then turned it into a mould to harden. It should be stirred until it will retain the outline of the beater, or the gelatin may be found to have settled to the bottom before hardening. In making gelatin desserts, if the tin vessel containing the mixture is placed in a pan of ice water it will not require so much stirring to thoroughly chill the mixture so it will retain any impression made upon it. The mould containing a gelatin dessert should be kept in a cold place.

CARAMEL BAVARIAN CREAM.—Caramel Bavarian Cream is made in the same way as the Coffee Bavarian, only using two tablespoonfuls of caramel and one gill of sherry instead of the coffee, and one pint of milk instead of one-half pint.

SNOW PUDDING.—In making a Snow pudding we covered one-half box of gelatin with cold water, and after it had soaked one-half hour we poured over it one pint of boiling water and added two cupfuls of sugar; after stirring until the sugar was dissolved we added the juice of three lemons and strained all into a tin basin, which we stood in ice water. When cold we beat it with an egg-beater until white as snow, then stirred in the whites of four eggs which had been beaten to a stiff froth. The mould had been thoroughly chilled by holding in cold water. We poured out the water, turned the pudding into the mould, and put it in a cold place to harden, which will require about four hours. Two tablespoonfuls of sherry improves this pudding for some people. Snow pudding is served with a vanilla sauce poured around it. The sauce is composed of the yolks of four eggs, one-half cup of sugar, one teaspoonful of vanilla and one quart of milk.

Your affectionate cousin,

VIRGINIA REED.

LETTER XXIII.

March 28, 189–.

My Dear Cousin Alethea: The professor has delivered his last lecture before our class, and I have copied my report of all of them for you excepting the one on "Disinfectants," which I will now copy.

Steam and boiling water are the best disinfectants, but cannot always be used.

Sulphur fumes is the oldest way for disinfecting a room, and is sure, if it touches the microbes. Put the sulphur in a pot and put the pot on bricks, which are placed in a tub containing water enough to more than cover the bricks. Four pounds of sulphur will disinfect one thousand cubic feet of space. Use the brimstone in lumps and moisten it with one-half cupful of alcohol, though two tablespoonfuls would do. Cover the pot with a coal sieve to prevent any from popping out and setting fire to the room. Of course the doors and windows must be closed before applying a lighted taper to the alcohol and sulphur.

Water boiled one or two minutes is safe for drinking purposes. In boiling linen be sure that it all boils; punch down well and boil some time. Dry heat is also good, but it must be far above 212°, the same as in any other baking. Delicate fabrics could not stand this, so subject them to formalin, which is volatile and not free from poisonous action.

A person may acquire typhoid fever by using infected water or milk.

It is best to put the disinfectant in the vessel before the patient uses it, and also cover at once with lime, air-slacked, adding the lime freely. Corrosive sublimate is also good, but it is very dangerous, being a deadly poison.

Superior to the above is chlorid of lime, which comes in paper cases. It deteriorates if exposed to the air. Sometimes it is pasty and has a strong odor. It is then of an inferior quality. Dryer and less odorous is better, but is good any way on discharges. Be careful with it on cloth. Put one or two quarts of water in a bucket, then add one pound of chlorated lime. Mash and stir with a stick till creamy, then add more water. This has great power as a deodorizer and disinfectant, or we can pour off the liquid, which is the best part. If to two gallons of it you add two pounds of washing soda it would keep longer and not spoil the clothes so much as lime. It is sometimes called Labarraque's solution.

Copperas is a deodorizer, but not a disinfectant.

Disinfectants should be employed singly, so as not to destroy each other's power. For the same reason soaps should not be used with ammonia.

Hydrogen dioxid, three per cent., is strong enough, but it must be a good article. If it goes off with a bang when being opened it is bad, because it is decomposing. If of a good quality it can be kept for months if it is kept quiet. This must not be mixed with other disinfectants, such as chlorid of lime.

Alcohol is also useful as a disinfectant. Iodoform is sometimes used to disinfect wounds.

The naphthols are used to prevent germs from growing, and so serve as disinfectants in some cases.

The questions we are having now are decidedly miscellaneous, but we will soon be through them.

How do you glacé fruits? Boil one-half pound of sugar with one-fourth of a cup of water without stirring after the sugar has all dissolved. Test the consistency occasionally, and whenever it can be broken quickly upon being plunged in cold water, and be brittle without being at all sticky, it should be removed from the fire and have two teaspoonfuls of lemon juice added to keep the syrup from granulating. The vessel containing the syrup should be placed in a vessel of

hot water, so as to keep it in a liquid condition while the fruit is being dipped. The fruit must be thoroughly dry before dipping, and after dipping it should be placed on oiled paper and be kept in a warm, dry place to dry. Never attempt to glacé on a damp day if you wish to meet with success.

What is the best method for cleaning currants? Rub well one quart of currants in one cup of flour and then sift them in a colander until all the stems have been removed. Wash them well in several cold waters, and when thoroughly drained put them to dry on flat dishes in a warm place.

Why does boiling water poured over dry gelatin toughen it? The chemical effect of heat upon fibrin is to harden the fibrin, and as gelatin is obtained from the fibrous tissue found in bones, ligaments, tendons, skin and various membranes of animals, of course the effect of the heat would be the same.

What are orange baskets, and how are they made? Orange baskets are made from the rind of oranges by cutting the rind in the form of a basket. The pulp is all removed and the basket filled with cubes of jelly.

How do you blanch and salt almonds? Pour boiling water on almonds that have been shelled and let them stand five minutes. Remove the skins. Add a little oil and put them in the oven and stir until brown. Remove from the oven and dredge with salt and turn them out to cool.

What is larding? How is it done? What meats are best larded? Larding is inserting fine strips of fat pork into other meat. It is done by cutting the pork fat lengthwise into strips and inserting one end of a strip into a larding needle, which is drawn through the meat to be larded, leaving each end of the fat projecting from the meat. Meats deficient in fat are best larded.

What are lardoons? Lardoons are the fine strips of fat, taken from next the skin along the flank of the hog, that are used in larding.

Describe a larding needle and trussing needle? A

larding needle is a long, slender funnel, split at the large end, into which the lardoon is slipped, and the split strips being compressed around the lardoon, hold it until the needle is pushed through the meat. A trussing needle is a long needle with a three-sided point. A truffle needle is made on the principle of a fine syringe.

Why is lard better for greasing cake pans than butter? Because lard does not burn so quickly as butter.

Should you measure flour before or after sifting? After sifting, unless the recipe says to do otherwise.

What is baking powder? Baking powder is a preparation for imparting lightness to the ingredients with which it is mixed. It is composed of an acid and an alkali and a filler to keep them from acting on each other.

Give a formula for baking powder made from tartaric acid. Another from cream tartar. Three-fourths of a pound of tartaric acid, one pound of soda and one pound of starch. One pound cream tartar, one-half pound of soda and one pound of filling, either flour or starch.

If you put a cold article in an oven while a cake is baking what will happen to the cake? The cake will chill and fall, though if the cake is nearly done the chilling will cause it to shrink from the sides of the pan.

How should you look at a cake while it is baking? Look quickly, closing the door without jarring.

How can you tell when a cake is done? By testing with a splint, or by seeing if it responds to the touch, or when it does not tick loudly it is done.

Do cakes containing butter require a moderate or a hot oven? Cakes without butter? Cakes containing butter require a moderate oven. Cakes without butter require a quick oven.

How should you turn a cake from the pan when done, and where should you place it to cool? Upside down on a towel or sieve in a place where a draft will not strike it. A delicate cake should be turned upside down on a rest and left to cool in the pan.

Give recipe for cake without eggs. Make a cream of two ounces of butter and one and one-half cups of sugar, and add one cup of milk and two cups of flour, and beat well. Add one-fourth of a teaspoonful of salt, one teaspoonful of flavoring and one teaspoonful of baking powder. Beat thoroughly and bake about half an hour in a moderate oven.

What are cookies? Apees? Cookies are small, flat, hard, sweetened cakes. Apees are Ann Page's cakes, and are small cakes somewhat richer than cookies.

What are buns? Rusks? Both are light, soft, sweetened cakes or biscuits, and are made from yeast dough to which has been added butter and eggs, and have the top glazed with sugar and milk. The buns have spice and fruit added. Hot, cross buns contain spice and have a cross cut on the top.

How do eggs produce lightness? The albumin is elastic and entangles the air during the beating, which it holds till the heat of the oven hardens the mixture and drives the air from the bubbles.

What produces the lightness in pastry? The lightness in pastry is caused by the expansion of the air between the layers made in rolling and folding the dough.

Why must starch be cooked? Starch is cooked to soften the cellulose or membrane surrounding the starch grains, so that it will burst, and then when eaten we will have a chance to digest it.

What changes are produced in fat by heat? The fat melts and its natural water evaporates, and then if heated too long it is partly changed to a fatty acid which is irritating; therefore food for the sick should be very carefully prepared.

What may be said of the digestibility of pastry and puddings? They are very hard to digest, part indeed being indigestible. The fat or oil encases the starch and prevents the cells from bursting. The fat is not digested until it reaches the intestine, and the starch-cells being unbroken cannot be digested.

What is a potpie? A potpie is composed of meat and pastry boiled together.

Layer Cake.—In making a layer cake we oiled three deep jelly-tins and lined them with paper, and then measured out the ingredients very carefully before we beat one half-pound of butter to a cream and gradually beat in one-half pound of sugar—powdered sugar being preferred, as it makes a lighter cake than granulated sugar. We continued beating while we added the beaten yolks of five eggs and then the well-beaten whites of the five eggs. We had sifted two ounces of cornstarch with six ounces of flour and one teaspoonful of baking powder, so we added them to the butter, sugar and eggs, beat them well, and then measured and added one teaspoonful of vanilla and two tablespoonfuls of sherry; when well mixed we turned the batter into the jelly-tins and baked them fifteen minutes in a moderately quick oven. When done we turned the layers out on a cloth, and after removing the papers we left them to cool. We never handle a cake while hot. We made the filling by boiling one-half pound of powdered sugar with one gill of water. We beat the whites of two eggs until very stiff, and when the syrup formed a heavy thread as it dropped from a spoon, we poured the syrup over the beaten whites of the eggs, beating all the time, and continued to beat them until cold and thick. We added one teaspoonful of vanilla, and as the layers were cold we poured the filling over one layer, having it to extend to within one-half inch of the edge, and placed another layer on top, spread the remainder of the filling on it, and put on the other layer of the cake, and sprinkled the top with powdered sugar.

Spice Cake.—In making spice cake we seeded and chopped one pound of raisins. We dissolved one level teaspoonful of bicarbonate of soda in one tablespoonful of boiling water and stirred it into one-half cupful of molasses, which we turned foaming into a granite or Japanese mixing-bowl, and at once added

one cupful of *thick sour cream;* after stirring we added one cupful of brown sugar, one-fourth teaspoonful of salt and three and one-half cupfuls of pastry flour, and beat it thoroughly. We then added one tablespoonful of ground cinnamon, one tablespoonful of ground allspice and the pound of raisins, which had been well floured. After stirring we turned it into an oiled tin and baked it one hour in a moderate oven. We always use a wooden spoon in beating or stirring a cake.

CHOCOLATE CAKE.—In making a chocolate cake we dissolved two ounces of chocolate in five tablespoonfuls of boiling water. We beat four ounces of butter to a cream and gradually added one and one-half cupfuls of sugar, and continued to beat while we added the beaten yolks of four eggs and then one-half cup of milk. We also added the melted chocolate and two cupfuls of pastry flour, and after giving it a vigorous beating we added the whites of four eggs, which had had one-fourth of a level teaspoonful of salt sprinkled over them, and then been beaten to a stiff froth. After stirring the mixture carefully we added one teaspoonful of vanilla and one heaping teaspoonful of baking powder, and when well blended we turned it into a paper-lined greased cake pan and baked it forty-five minutes in a moderate oven. Whenever pastry flour could not be obtained for use in making cakes we used a light winter wheat flour.

ANGEL FOOD.—In making Angel Food, as in the making of everything else, we measured all the ingredients very carefully before beginning to unite them. We sifted one and one-half cupfuls of granulated sugar four times and sifted one cupful of sifted pastry flour five times. After putting the whites of eleven eggs on a large platter we sprinkled over them one-half of a level teaspoonful of cream of tartar and beat them until they were so stiff that they would not move when the platter was turned upside down. We then mixed the sugar carefully with the eggs and gradually added the flour and stirred only enough to

mix all together; after mixing through it one teaspoonful of vanilla we turned it into an *ungreased* pan and baked it forty-five minutes in a moderate oven. When done we inverted the pan on a rest and let it so remain until the cake fell out.

SAND TARTS.—In making Sand Tarts we beat one-half pound of butter with one pound of granulated sugar until creamy; then added the yolks of three eggs that had been beaten very light, and afterward added the well-beaten whites of two eggs. When all was well blended we stirred in enough pastry flour to make a stiff paste. We rolled the paste out on a pastry-board, and after cutting the tarts out with a round cutter we placed them in a baking pan so they would not touch each other, and baked them in a moderate oven until a light brown.

CREAM PUFFS.—In making Cream Puffs we put two ounces of butter in one-half pint of water, and when it boiled we added four ounces of flour; leaving it over the fire, we stirred steadily until it stuck so together that it formed a ball which left the pan and stuck to the wooden spoon. We removed it from the stove, and when cool added one whole unbeaten egg and beat until it was all well blended; then we added another unbeaten egg and again beat until all was well blended, and so continued to do until four eggs had been added. After the last or fourth egg had been beaten in we beat the mixture vigorously for five minutes. We kept the mixture in a warm place, stirring it occasionally, and at the end of thirty minutes we put it by the tablespoonful on well-oiled tins, placing them so they would not touch each other by two inches. They were baked in rather a quick oven from twenty to forty-five minutes. When done they will feel perfectly light when they are picked up. They must be watched closely, as they burn quickly. When the puffs were cold we made an incision at one side, so as to insert the pastry tube, and filled each puff with the filling.

THE FILLING.—In making the filling we put one-

half pint of milk on in a double boiler, and while it heated we beat four eggs, yolks and whites together, with four tablespoonfuls of sugar; after adding to them one tablespoonful of cornstarch we stirred all into the steaming milk and continued to stir until rather thick, when we removed it from the stove and added to it one teaspoonful of vanilla, and stood it away to cool. When cold we put the filling in a pastry bag and filled the puffs.

As you may wish some time to try a genuine East India curry powder, I will copy now two recipes which I have received recently through friends from India.

CALCUTTA CURRY POWDER.—One teaspoonful of turmeric, one tablespoonful of coriander seed, one tablespoonful of poppy seed, one-half teaspoonful of ginger, one-fourth teaspoonful of red chillis, one-half teaspoonful of cumin seed. The seeds should be of the finest quality and well dried. Pound them fine, sift and mix, and then bottle.

CURRY POWDER.—Pound, sift and mix twenty ounces of coriander, four ounces turmeric, one ounce cumin seed, one ounce fenugreek, one ounce mustard, two ounces dried ginger, one ounce dried chillis, two ounces poppy seed, two ounces cardamoms, two ounces cinnamon and two ounces garlic. When thoroughly mixed together, bottle and keep the bottle well corked.

Your affectionate cousin,

VIRGINIA REED.

LETTER XXIV.

April 3, 189–.

My Dear Cousin Alethea: We have had a lesson in "Scouring." The married member of the class said it was one of the most beautiful lessons we have had. She realized the fact that it seems to be a satisfaction to a woman to make that which is dingy and ugly into something beautiful or as good as new.

For scouring brass we used warm vinegar and salt, rubbing with a woolen cloth. Then we used birdsand and dissolved soap, which we washed off in hot water. We polished it next with whiting and oil, still rubbing it with a woolen cloth, and then used a soft brush to remove any of the polish that had adhered to the ornamentation. For copper we used the same as for brass. The dissolved soap was merely cake or hard soap shaved down and made into the consistency of jelly by the addition of a little boiling water.

To remove a grass stain we washed the spot in alcohol.

For removing fruit stains we used dilute oxalic acid or chloride of lime, and afterward washed the acid or lime out in water, because, if left on any length of time, either one would eat a hole in the goods.

For removing iron rust, salt and lemon juice are best. Cover the spot with the mixture and place in the sunshine.

For scouring silver we used whiting and oil. Silver should be washed once a week in hot suds and then dried with a cloth and polished with a chamois skin. To keep silver which is only used occasionally, wrap each piece in tissue paper and then place them in a cotton-flannel bag.

To keep steel knives, dust each one thickly with starch, wrap with tissue paper, and place in cotton-flannel bags.

Ivory handles should never be dipped in water, because it not only discolors the ivory but is apt to loosen the handles.

In cleaning cut glass we washed it well in hot suds with a brush. We rinsed it in warm water and then covered it up in sawdust. We wiped it with a linen towel and polished it with a soft-haired brush.

For polishing windows we used alcohol, or alcohol and whiting, and finished by rubbing with a chamois skin.

For scouring tin we used bird or pewter sand and soft or dissolved soap and a flannel cloth; then dipped it in a warm solution of salsoda water and rinsed it immediately in clear water. We polished it with whiting and a flannel cloth, and after washing and wiping we put it on the back part of the stove to dry thoroughly.

For removing grease stains we added as much salsoda to hot water as the water would dissolve. To cleanse graniteware we stood it in the hot salsoda solution until the stains disappeared, when rubbed with an old brush. We then washed it in clear hot water and wiped it with a cloth.

In removing grease stains from wood we took the salsoda solution when cold and covered the stains, leaving them to soak a while. We then scrubbed them with a brush, making the strokes of the brush with the grain of the wood.

Describe a perfect kitchen. The room is as small as will contain everything needed. The walls and ceiling are painted and the floor is made of tile or hard wood. The windows are made to raise and lower easily, and so accessible that they may be cleaned readily. Rugs are placed where needed, and there is a table with zinc-covered top, made light, so as to be easily moved wherever wanted; and everything is most conveniently arranged for the cook.

What food should be kept in a refrigerator? A cellar? A dry closet? A dark closet? A light closet? Perishable things should be kept in a refrigerator, and the odorous things should be placed on the top shelf. Bulky articles and vegetables should be kept in the cellar. Canned goods should be kept in a dark closet. There is nothing that should necessarily be kept in a light closet.

Why do foods spoil? Foods spoil because the natural water they contain aids the microbes in their work.

What kind of refrigerator is best? One lined with wood and having dry air around it. Keep the ventilation good. Wash out with water and nitre in the proportion of one teaspoonful of the spirits of nitre to one gallon of water. Salt will kill snails and slugs.

What kind of diet is best for brain-workers? Easily digested foods, rich in nitrogen and phosphorus or phosphates.

What would be the consequence of an exclusive meat diet? It would make a person nervous, the same as a stimulant, and would bring on gout and rheumatism. Meat aids in the building up of muscles and nerves, but if taken raw it is apt to breed tapeworms.

Why does it take a polished surface longer to heat than a rough one? A polished surface refracts heat, but when heated it retains the heat longer than a rough surface.

Name all the vegetable acids and tell in what they may be found. Malic, citric, oxalic, tartaric, tannic, prussic and gallic. Malic acid is found in pears, plums, peaches, quinces, apples, blackberries, strawberries, raspberries, elderberries, pineapples, cherries, currants, gooseberries, potatoes and tomatoes. Citric acid is found in the lemon, orange, citron, lime, shaddock, tamarind, pineapple, cranberries, and mixed with malic acid in gooseberries and tomatoes, red currants, strawberries, raspberries and cherries. Oxalic acid is found in sorrel, rhubarb and gooseberries. Tartaric acid is found in grapes. Prussic acid is found in the kernels of cherries, plums, peaches and almonds. Tannic acid

is found in grape seeds and some apples. Gallic acid is found with tannic acid in some apples. Sulphuric and phosphoric acids are found in small quantities in apples. Acetic acid is found in the juice of some plants and in overripe fruit.

What flesh contains most fibrin? Beef.

What is glue? Glue is a gelatinous principle found in the hoofs, horns, skin, cartilages and sinews of old animals.

What are leguminous seeds? Seeds growing in pods which contain legumin, a substance somewhat different from vegetable casein. Beans, peas and lentils are leguminous seeds.

Why cannot you make bread from bean meal? Bread cannot be made from bean meal because such meal is deficient in gluten.

Why does a steel knife blacken in cutting apples? On account of the acids the apple contains, especially malic acid.

Why do fruits decay quickly? Fruits spoil because the large amount of natural water or juice they contain enables the microbes to live on it and the oxygen of the air, and in so doing the microbes destroy the fruit.

How do ripe and unripe fruits differ in chemical composition? The unripe fruit contains starch, a large amount of water and acids, a small amount of sugar and some pectose; as the fruit ripens the starch is transformed into sugar, the pectose becomes pectin, or something similar, and the acids partly disappear.

What so-called "weeds" are edible? Dock, sorrel, dandelion, plantain, poke, kale, mustard, lamb's quarter, cowslip and watercress.

What is asparagin? What vegetables contain it? Asparagin is a white crystallizable principle, and is the active principle found in asparagus. It is also found in potatoes.

What gives flesh its red color? Iron in the hemoglobin.

What causes dough to sour? Can this sourness be

removed? The fermentation in the dough has gone beyond the alcoholic stage into the acetic stage. The sourness may be partly corrected by adding a little carbonate of soda or carbonate of ammonia.

Why cannot you use yeast with molasses? Yeast refuses to grow in the presence of an acid.

What is dextrin? Dextrin is a gum obtained by heating starch to a temperature of three hundred and twenty degrees. It is soluble in water but insoluble in alcohol. It was discovered by a fire in a starch factory.

What is rennet? How does it thicken milk? Rennet is the fourth stomach of the calf. Its acid coagulates the casein of the milk.

What is whey? Whey is the liquid part of milk left from the separation of the curd. It contains the sugar and the salts of the milk, and also a little casein and fatty matter.

What is clotted cream? Clotted cream differs from ordinary cream in being of a solid consistence, and though still sweet it has been raised by heat. When you can see the shape of the bottom of the pan it is clotted sufficiently.

BOUILLON.—In making bouillon we removed all the fat and gristle from two pounds of lean beef, then run the beef through a Perfection cutter and put the finely ground meat in a granite soup kettle with one quart of cold water, and after covering the kettle closely we placed it on the back part of the range. At the end of two hours we placed the kettle over a good fire and skimmed as soon as it boiled. After skimming we moved it back a little and left it to simmer gently for three hours. We then added one small onion sliced, one bay leaf, one sprig of parsley and one stalk of celery, or one-half teaspoonful of celery seed when the celery cannot be obtained, and left it to simmer one hour longer. We washed the shell of one egg and then broke it carefully, so as to have only the white in a bowl, to which we added the crushed shell and

one-half cupful of cold water, and beat it until thoroughly mixed; then added them to the contents of the soup kettle and let it boil hard for ten minutes. We then added one gill of cold water, and when it had boiled five minutes longer we removed the kettle from the fire and strained its contents through a flannel bag. We added salt to taste and colored it with caramel in about the proportion of one-half teaspoonful of caramel to one quart of bouillon, and it was ready to be served.

Caramel.—In making caramel, which is used for coloring soups, sauces and puddings, we put one cupful of granulated sugar in a granite pan and stirred the sugar until it melted and browned. When it boiled and began to smoke we added one cupful of boiling water. We stirred it, and when it had boiled a minute we poured it into a bottle, which must be kept well corked.

Consommé.—In making consommé we selected two pounds of lean beef from the under part of the round and two pounds of veal from the knuckle, and cut the meat into pieces about one inch square. We put two ounces of butter in a soup kettle, and when it had browned we added the meat, which we stirred over the fire until it also was a nice brown; we then put a cover on the kettle and left it to simmer on the back of the range. At the end of thirty minutes we added two quarts of cold water and left it to simmer four hours longer. We then added one bay leaf, one stalk of celery, one sprig of parsley, one small carrot and one onion. The onion and carrot had, of course, been peeled before being sliced. We allowed it to simmer one hour longer, then strained it through two thicknesses of cheesecloth which had been wrung out of cold water and spread over a colander or sieve. We stood it in a cold place to cool. When cold we removed all the fat from the surface, first by using a spoon and afterward by pieces of soft paper which we spread on the top of the liquid. The consommé was then ready to be reheated and served, or it can be clarified and colored the same as bouillon

In serving Consommé à la Royal, a custard is made from two eggs beaten together with two tablespoonfuls of the consommé, and a dash of salt and red pepper added. The flat pan containing the custard is placed in another pan containing water and then baked. When done the custard is cut in some fancy shape and put in the soup tureen with the heated consommé just before it is served.

Mock Bisque Soup.—In making mock bisque soup we put one pint can of tomatoes on to stew and added one bay leaf, one sprig of parsley and one blade of mace, and left them to stew fifteen minutes, while we put one quart of milk on in a double boiler, and, rubbing one large tablespoonful of butter with two tablespoonfuls of flour, added them to the heated milk, stirring continuously until it thickened. We pressed the tomatoes through a sieve, and just before serving the soup we added one teaspoonful of sugar and one-fourth of a teaspoonful of baking soda to the tomatoes, and then the hot milk, and after stirring it was served at once. It must not be heated after the milk has been added to the tomatoes or it will separate.

Oxtail Soup.—In preparing oxtail soup we first peeled one onion, one carrot, and one turnip. After washing and wiping two oxtails we cut them into pieces one inch long. We put two ounces of butter in a sautéing-pan, and when hot we put in the oxtails and turned them until brown; then removed them to a soup kettle and added the onion, carrot and turnip, and four whole cloves, one bay leaf and two quarts of cold water or stock, and left it to simmer until the oxtails were tender—about two hours. We then removed the vegetables, added salt and pepper to the soup, and it was ready to be served, though when wine is used one glass of sherry would have been added.

Oxtails also make a good brown stew.

Mock Turtle Soup.—In preparing mock turtle soup we used one calf's head of which the butcher had un-

jointed the jaws and taken out the brains. We washed it thoroughly in cold water, then poured boiling water through the throat and nasal passages, after which we washed it again in cold water. We put the head in the soup kettle with the calf's heart and liver, which had been well washed, covered it with three quarts of cold water and put it over a moderate fire. We skimmed it as soon as it boiled, and again in fifteen minutes. We left it to simmer until the meat was tender—about two hours. We lifted out the head and removed the meat and tongue; then put them to cool and returned the bones to the soup kettle, adding one carrot, one onion and one turnip, which had been peeled and sliced, and also added one bay leaf, twelve whole cloves and a bunch of pot-herbs, and left them to simmer two hours longer. We then strained it and put it away to cool. The heart and liver were added to the rest of the meat in the refrigerator. In the morning we removed all the fat from the surface of the soup and cut the meat from the head and half the liver into cubes. We put two ounces of butter in a large stewpan and stirred it until a nice brown; we then added four tablespoonfuls of flour, and when mixed well we added the soup; after stirring and boiling it five minutes we added the meat we had cut into cubes, and when it boiled again we removed it from the fire. We then added one tablespoonful of Worcestershire sauce, one tablespoonful of mushroom catsup, salt and pepper to taste, and if wine is used, a glass of sherry. We sliced two hard-boiled eggs and one lemon, casting away the seeds, put the eggs and lemon in the tureen and over them poured the boiling soup; then it was ready to be served.

Egg Ball.—In making egg balls we boiled three eggs for fifteen minutes, then removed the yolks and mashed them fine, and added one-half teaspoonful of salt and a dash of cayenne and worked them together with the uncooked, unbeaten white of one small egg, or the half of a large egg. We formed the mixture into small balls and dropped them into boiling water.

When they rise they are cooked sufficiently, and are then drained and put in the soup tureen. They are served with mock turtle soup and with clear soups.

Soup à la Reine.—In preparing soup à la Reine we cleaned a fowl weighing five pounds and put it in the soup kettle with three quarts of cold water and one-half cupful of rice, covered it and left it to simmer gently for two hours. We pared one carrot and one onion and cut them into squares. We put three ounces of butter in a frying pan, and when hot added the onion and carrot and stirred them until a nice brown. We then skimmed them out and put them in the soup kettle, and added one bay leaf, three cloves, one blade of mace and a piece of cinnamon one inch long, and covered it and left it to simmer another hour. At the end of that time we added two tablespoonfuls of flour to the butter left in the frying pan, and when mixed we stirred it into the soup and skimmed it as soon afterward as it boiled. We next took out the chicken, chopped the white meat very fine and put it back into the soup kettle. We took out the carrot and spices and pressed the rest through a sieve; then washed the kettle and put the soup back in it, and added one pint of good cream and salt and pepper to taste; when it boiled again it was ready to be served. When wine is used a gill is added at serving time.

Pepper Pot.—In preparing pepper pot we washed well, in cold water, one pound of plain tripe and one pound of honeycomb tripe, and having put it in the soup kettle, covered it with cold water and boiled it eight hours. The next day we wiped a knuckle of veal with a damp towel, covered with three quarts of cold water, put it over the fire and brought it slowly to the simmering point, and having removed the scum as it came to the surface, we left it to simmer three hours. We then strained the soup and returned it to the kettle, and washed one bunch of pot-herbs, chopped the parsley, rubbed the leaves off the thyme, cut up one-half of the red pepper, cut two medium-sized white potatoes, that had been pared, into cubes, and

added all these ingredients, with one bay leaf, to the soup. We cut the tripe into one-inch squares, and all the meat from the knuckle into small pieces, then added the meat to the soup, which we brought forward over the fire, and when it boiled we seasoned it to taste with salt and cayenne; after rubbing together two ounces of butter with two tablespoonfuls of flour, we added them to the soup, with fifty small dumplings made according to the following proportions:

We chopped fine one-fourth pound of suet, and having measured it carefully, took twice the quantity of flour, one-fourth of a teaspoonful of salt and mixed them well together, using ice water to moisten—about a fourth of a cupful. We made the dumplings about the size of a common marble, and added them to the soup. They, with the soup, were ready to be served after they had simmered about fifteen minutes.

Your affectionate cousin,
VIRGINIA REED.

LETTER XXV.

April 10, 189–.

My Dear Cousin Alethea: We have had a most delightful change in our work. A special teacher has given us lessons in "Table Serving." We prepared a luncheon one day and part of us played we were the guests, while the rest of the class were the servants who served the luncheon. Another day we prepared a dinner which the others served. I will write out all I can remember of her directions.

The four things essential in the perfect serving of meals are promptness, quiet, order and self-control.

The table should be covered with cotton-flannel, or else with flannel, before the tablecloth is put on. Table linen should never be starched, but while wet it should be ironed until perfectly dry. Never shake a tablecloth, but use a crumb tray and scraper or napkin.

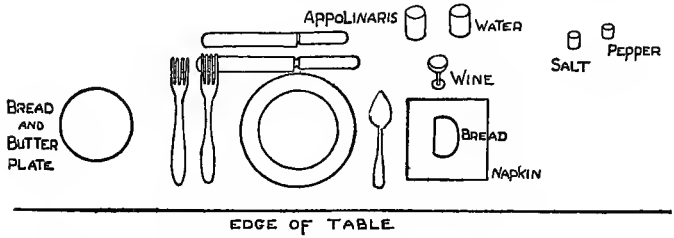
The center piece should be laid, and the table mirror and flowers, or fruit in a dainty receptacle, placed in the center of the centerpiece.

The host and hostess are to be seated at the ends of the table, so if carving cloths are to be used they should be placed accordingly, and then the dishes containing olives, salted almonds and bonbons, should be placed so as to give the table a symmetrical appearance.

The chairs should next be placed at the table, so as not to be knocked about the room, and also to keep the tablecloth from becoming mussed.

The knives, forks and soup spoon are next placed on the table, and the napkin is placed at the right with the hem next the edge of the table, and to the right

with the embroidered lettering on the top; but if the napkin is marked with indelible ink, the marking is folded inside. This is the way each cover is arranged.



The knives are one-fourth of an inch apart. A Vienna loaf of bread is cut into slices one inch and a half thick and one piece is placed upon each napkin. Salt and pepper shakers are placed between each two persons.

The ice should be cracked and kept in the refrigerator until the last minute, being put into the glasses for Appolinaris just before the guests come to the table.

The sideboard must also be carefully arranged. There must be a finger bowl two-thirds full of water for each person. Each finger bowl should stand on a doily on a dessert plate. There should also be a holder or plate of cheese, a plate of wafers, and a tray holding the oil and vinegar cruets and spoon and fork for the making of salad dressing. The third fork, instead of being placed on the table, is placed on the sideboard, one on the pile of plates to be used for the salad and the rest of the required number by the pile.

Never use any tray for serving but brass or Japanese, unless it is covered with a napkin or a tray cloth.

There should also be a plate of butter balls on the sideboard and the crumb tray and scraper. If jelly is to be served with the meat it should stand on the sideboard till needed.

The glasses are filled with water the very last thing and a bouillon cup is placed on a doily on each plate; when everything is ready the servant enters the parlor, and when the hostess looks at her the servant says "Luncheon is served."

When the guests are seated the waitress removes the lids from the bouillon cups and the guests take it while hot with a spoon, but when cooler they take it directly from the cup. Butter balls are passed after the soup is served, so that it can be eaten on the bread with the soup. The plate, doily and bouillon cup are removed, all at one time, from the left side with the left hand, while a fresh plate is put by the right hand in the vacated place.

The host carves and serves the meat and the vegetable is passed by the waitress. Women carve when servants are not plenty and when no men are present. Poultry should be cut up in the kitchen while the fish is being served.

The hostess serves or dishes out the soup, fish, salad and dessert.

When removing the plates immediately before serving the salad, the plate of the hostess should be taken first instead of last. This is done in order that she may be making the dressing while the other plates are being changed; therefore a dish is placed before her, the tray of cruets at her left and the salad in front of her. The other plates should then be removed, always putting down a fresh plate as the soiled one is removed. The salad can be passed by the waitress and each one serves herself, or the hostess may prefer to help the plates. Crackers or wafers and cheese are served with the salad before the guests commence to eat it. The cheese and salad are eaten with a fork, though it is not wrong to assist cutting with a knife.

Never serve a mayonnaise dressing on a salad after meat has been served in a fancy shape.

After the salad remove everything except glasses and carafe, bonbons, almonds and olives; then use the crumb tray and scraper or napkin.

Serve the dessert. If the dessert is served on a plate put on a spoon or fork before passing. Ice cream may be served with a fork and spoon.

The English may use a fork alone for their dessert, but never a spoon without a fork to assist.

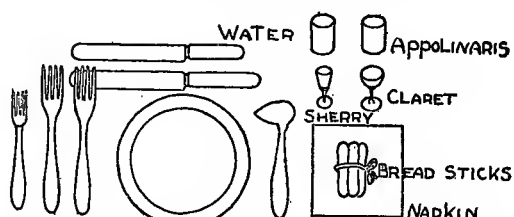
Remove the dessert plates and serve the finger bowls. The finger bowls can be pushed to the left, or lifted from the plate and put to the left, and remain on the table. Bonbons are served next and then the coffee. Coffee is lifted from the tray by the guest after she has added to it the cream and sugar desired. If no tongs are on the tray, pick up the sugar with the fingers.

If forks or extra spoons are needed they should be placed on the table at the right of the person.

Americans leave the napkin in a bunch on the right-hand side of the place. The English leave the napkin on the chair.

For a dinner or formal luncheon lady fingers or bread sticks are tied in bundles of three by a ribbon and placed on the napkin.

In laying the table where croquettes are to be served three forks are placed for each cover.



ARRANGED FOR A DINNER.

The soup plates are also placed for each person before the waitress announces that "Dinner is served."

When the guests are seated the soup tureen is brought in and placed before the hostess, who serves

the soup. As each soup plate is removed it is replaced by a fish dish or plate. The soup tureen is removed after the soup plates have been taken away.

Butter is never served at dinner.

As fish plates are removed the meat plates are placed. The meat may be carved by the host or on the sideboard by the servant. The vegetables are placed on the sideboard and are passed by the waitress and each person helps herself. The starchy vegetable is passed first and then the green vegetable.

The carving cloth and meat plate are removed from before the hostess and the salad placed before her, and also the plate in which to make the dressing; the tray holding the cruets of oil and vinegar, with salt and pepper, is placed at her left. While the hostess is making the dressing, the other meat plates are removed and salad plates are put in their places. After the dressing is made and put on the salad, the fork, spoon and dish, and also the tray and its contents, are removed. The salad is passed and each one helps herself; then the wafers and cheese are passed. Next are removed the salad plates, salt and pepper shakers, wine glasses, but no other glasses, and the table is brushed.

The dessert and one dessert plate is placed before the hostess. Put down a fresh dessert plate before the hostess and place the dessert that has been served before the guest of honor. Take another fresh dessert plate from the sideboard and place it before the hostess, and place the dessert that has been served before another guest, and so continue to do until all have been served. Or the dessert may be already upon dessert plates on the sideboard and be served from the sideboard.

Extra forks or spoons are always placed by the waitress at the right side of the guest.

Remove all the dessert plates, serve the finger bowls, then the bonbons, and then the coffee. The finger bowls can be used as soon as brought on and after the coffee.

Salted almonds are passed at all times; so also are olives, gherkins and celery.

The waitress must see that each guest is supplied with bread and water. A guest must never be compelled to ask for either. Water and wine glasses are filled whenever the waitress has nothing else to do. When a guest wishes no more wine he places his finger across the glass. Of course the water glasses were filled before the guests were invited out, and so also was the ice put in the Appolinaris glasses.

This new teacher was a graceful lady, of most charming manners, and we enjoyed her instructions so much that all of us were sorry when the lessons were ended. The first day she came she brought a dish-mop—a bunch of white cord fastened to one end of a wooden handle. She said she did not know whether we used such an article or not, but in her own house the servants always used such a mop in washing the dishes. She would not think of allowing fine china to be piled one piece upon another as in the patented dishwashers. Such dishwashers might be labor-saving machines in large hotels, but certainly would be hard on the enamel and decoration of china.

The colored girl who washes the dishes for our school uses a dish-mop similar to the one she brought.

I have thought upon the subject and regretted that soon the cord forming the mop part would become stained and a person would want a new one, so I have devised a way of quickly renewing the mop part, which I should prefer having made of linen fringe instead of cotton. Now, Cousin Alethea, when I have taken out a patent on "my adjustable dish-mop," and have some manufactured, I shall be delighted to send you one for trial.

How does salt act in preserving meat? Salt draws out the natural water from meat, and by depriving the microbes of it keeps them from growing; it also draws out organic and mineral constituents.

What effect does it have upon the fibrin? Salt toughens fibrin and makes it harder to digest.

What happens to vegetables soaked in salt water? Salt toughens their cellulose and makes them harder to digest.

What flesh contains phosphorus? All flesh contains some, but fish, oysters and sweetbreads contain the most.

What kind of soup is most strengthening? Thick.

Why are cakes less digestible than bread? Cakes are less digestible than bread on account of the butter they contain, especially that in the crust of the cake which has been changed to butyric acid.

What is vinegar, and from what is it produced? Vinegar is dilute acetic acid, made by the aid of microbes from malt, cider, white wine and various fruits.

What is starvation? Starvation is the non-assimilation of food material.

Why is ice water injurious? Because it lowers the temperature of the stomach below the normal degree.

What are supposed to be brain nutriments? Foods rich in nitrogen and phosphates.

Why should breakfast be eaten soon after rising? The system has used the food that has been taken in and other must be taken to replace the force expended in work. The craving for food is nature's call for such material, and unless answered the system will be compelled to use the stored-up material.

Why are late suppers injurious? Late suppers are injurious because the stomach, as well as the rest of the system, requires a certain amount of rest, and food taken late, especially indigestible food, shortens that time.

What are liquid foods? Solid foods? Semi-solid foods? Liquid food is such food as does not require to be masticated, and can be digested in one organ, except milk, which requires two organs. Solid food requires mastication and may be digested in one or more organs. Semi-solid food does not require mastication and yet requires two organs for its digestion.

Of what use are acids as aliments? Acids aid in keeping the blood in a liquid condition.

Why do you use an acid in mayonnaise? An acid is used to neutralize the oil and to give flavor to the dressing.

What is the "mother" in vinegar? Mother of vinegar is a thick, slimy substance which accumulates in vinegar, and is really a collection of microbes, though it is on the borderland between microbes and fungi.

What is cacao butter? Cacao butter is the firm fat obtained from the bean of the *Cacao Theobromine.* It does not become rancid.

Why does cream come to the surface of milk? The fat globules are lighter than milk, therefore their tendency when not agitated is to rise to the top.

What is the greatest quantity of oil that can be worked into the yolk of one egg? One quart.

How can mayonnaise be "brought back?" By beginning again with the yolk of one egg and adding oil drop by drop, and then when well started gradually adding what had separated.

How do albumin and oil differ in composition? Albumin belongs to the nitrogenous division of food, and contains nitrogen, oxygen, hydrogen, carbon and sulphur, while oil contains carbon, oxygen and hydrogen, and belongs to the Carbonaceous division.

How do you wash meat and jelly bags? Dissolve soap or borax in hot water and wash the bags in it; rinse in water the same temperature and dry quickly. Never put soap on the bags or boil them.

What is the general principle of cleansing? The supplying of one substance with another which is its affinity.

What is the difference in texture between woolen, cotton and linen fabrics? The filaments of cotton and linen are straight and smooth, while those of woolen are toothed and jagged, which causes the surface of woolen goods to appear matted. Linen is harder twisted than cotton, and does not stain so quickly.

How do you remove oil stains from wood? With

an acid or an alkali, scrubbing with the grain of the wood. Do *not* use hot water on the wood.

What is cookery? Cookery is the science of making food palatable and easy of assimilation, while at the same time giving it an attractive appearance.

Canning Apples.—In selecting apples for canning we took only those that were perfect and fresh; as we pared them we dropped them into cold water, so they would not discolor while we prepared the rest of the four pounds. When we had pared enough for a jar or two we put them in a granite kettle, covered them with boiling water and left them to simmer until so tender that they were easily pierced by a straw. We put one pound of sugar in a granite kettle with one quart of water and stirred until the sugar was dissolved; then added the grated yellow rind of one lemon, and after it had boiled three minutes we lifted the apples carefully with a strainer and put them in the syrup. When the syrup boiled up again we put the apples into wide-mouthed glass jars that had been heated and were standing on a folded damp towel. When the jar was filled to overflowing we screwed on the top, which had also been heated. Before putting the top on we passed a silver spoon around in the jar so as to break up any air bubbles that might have formed. We left the jars in a warm place, where the cold air could not strike them, and in the morning tightened all the tops we could. In a week or two we saw no air bubbles at the top, so we were sure they would keep all right.

This is the general plan for canning all fruit. Small fruits, however, are best sugared an hour or two before canning. The quantity of sugar to be used depends on the variety of the fruit, though, of course, it could be canned very well without any sugar.

Apple Jelly.—In selecting apples for jelly, if a red jelly is wanted, use Ladyblush apples; or if an almost white jelly is desired, use fall pippins. We wiped the apples, and without coring or paring them, we cut

them in pieces, and after putting them in a granite kettle covered them with cold water, and having put a cover on the kettle left them to boil. When the apples were very tender we drained them through a flannel jelly bag. We were careful not to squeeze the bag, as that would take away the clear look from the jelly. We put the juice in a clean granite kettle and brought it quickly to a boil; to every pint of juice we added one pound of granulated sugar, and then stirred until the sugar was dissolved. We then allowed it to boil rapidly, removing the scum that came to the surface, and at the end of fifteen minutes we began to test it. It usually takes about twenty minutes for fruit juice to jell. In testing it we put a teaspoonful in a small dish, and after cooling a moment, if the top when pushed back with a spoon seemed partly solid, it was pronounced done, and we at once rolled the tumblers in boiling water and then filled them with the boiling liquid. After standing until morning the jelly was firm and cold, so we put the lids on the glasses that had lids, covered the tops of the others with two thicknesses of tissue paper, the edges of which we pasted to the glasses, and then brushed the top of the paper with a sponge dampened with cold water. The paper when dried formed a smooth, tight covering. We put the jelly in a cool, dark place to remain until wanted for use.

Your affectionate cousin,
VIRGINIA REED.

LETTER XXVI.

April 17, 189–.

My Dear Cousin Alethea: One morning the principal of the school came in and gave us the following outline as a guide to help us in making out a menu:

1st.—Oysters.
2d.—Soup.
3d.—Olives, celery, gherkins, or cut cabbage.
4th.—Fish.
5th.—Croquettes, patties, or small made dishes.
6th.—Main meat dish.
7th.—Punch.
8th.—Game.
9th.—Salad.
10th.—Sweets.
11th.—Fruit.
12th.—Coffee.

She also dictated to each of us the amount of various ingredients to be used in preparing a certain dish we had never made. Each of us was to combine the ingredients as we thought they ought to be. The idea was to find if we had paid good attention to what we had seen and heard.

I will now write out the recipes for those dishes and others which we have made or had given us that were not on our cards.

Coffee Cake.—Put one pound of flour—winter wheat being preferred to the spring variety—in a bowl and make a well in the center. Into this well put five ounces of butter, four well-beaten unseparated eggs, four tablespoonfuls of milk, one tablespoonful of sugar, one-half teaspoonful of salt and a biscuit of leaven.

The leaven is made by breaking up a cake of compressed yeast in two tablespoonfuls of warm water, and when the yeast has dissolved, work into it two or three tablespoonfuls of flour to make a soft biscuit. Into a deep two-quart utensil filled nearly full of warm water drop the biscuit, which has been patted and marked with a cross. The biscuit of leaven should grow light and rise to the top of the water in five minutes. During those five minutes work together the ingredients in the bowl, with the hand, and add the leaven when it has come to the top of the water. When the mixing is over fold the dough carefully and take it out on the board as soon as possible; next put it in a greased pan and stand it aside in a warm place. At the end of three hours turn it out on the board and roll the dough into long strips, which should be twisted and wound, one length at a time, upon a buttered pan, forming a spiral curve. Put in a warm place for one hour and brush with beaten egg and dust with granulated sugar before baking thirty minutes in a quick oven.

GERMAN CAKE.—Scald one-half pint of milk and add two ounces of butter cut into small pieces. Into a bowl put one-half pound of flour; make a well in the center and into it put the milk and butter when the mixture has cooled, and also add four well-beaten eggs, four tablespoonfuls of sugar, one-half teaspoonful of salt and a biscuit of leaven made as for the coffee cake. Stir all together with a wooden paddle and add one and one-half cupfuls of flour; then tip the bowl on one side and beat thoroughly. The dough must be very soft and mixed in layers as nearly as possible. Stand it in a warm place. As soon as the dough has been allowed to grow light for three hours, spread it out over a buttered pan in a thin sheet. Next take one-half cupful of granulated sugar and one-half cupful of butter beaten together, and having made slight indentations over the cake with the finger, fill the places with the butter and sugar and sprinkle one teaspoonful of cinnamon over the top, and also

sprinkle over it one-half cupful of chopped citron and one-half cupful of mixed nuts, chopped almonds and English walnuts being preferred. Put it in a warm place for half an hour and bake it in a quick oven. This cake should remain in the pan until perfectly cold. It is served cut in squares.

Eggs a la Newburg.—Hard boil six eggs and cut them in half crosswise. Take out the yolks, mash them fine, and season with salt and pepper, one tablespoonful of melted butter and one tablespoonful of parsley chopped fine. Cut the tip off from the end of the whites so they will stand level. Make a ball of the yolk mixture and put in each white and arrange them in a dish. Make a sauce of one ounce of butter, one tablespoonful of flour, one-half pint of milk, one-half teaspoonful of salt, one-fourth teaspoonful of pepper, and add the beaten yolks of two eggs and also one tablespoonful of sherry. Pour it over the eggs and serve.

Egg Cutlets.—From one ounce of butter, two tablespoonfuls of flour and one-half pint of milk make a thick sauce; season it with one teaspoonful of salt, one teaspoonful of onion juice and one-half teaspoonful of pepper, and add the whites of six hard-boiled eggs that have been pressed through the vegetable press. Spread the mixture out to cool. Cut the yolks into halves and put one-half in the center of each cutlet, covering the yolk with the cold-cream mixture. Pat it into the desired shape, and dip each cutlet in beaten egg, then in crumbs, and fry in heated oil till a golden brown.

Cocoanut Milk.—Pour one pint of boiling water over a freshly grated cocoanut and let it stand until cool. Squeeze out the cocoanut, strain the milk through cheesecloth and use this milk for salads. Pour over the cocoanut another pint of boiling water. When cool and strained save this milk for curry. Pour on the cocoanut the third pint of boiling water, and when cooled and drained use this milk for cooking. The cocoanut is then thrown away. The cream coming to

the top of the first milk is made into the butter which is so good for the skin.

East India Curry of Chicken.—Prepare a chicken as for a fricassee. Peel and slice one dozen onions which are about one inch in diameter. Slowly brown the onions, a light or golden brown, in two ounces of butter. Then brown the chicken in the same butter and simmer both onions and chicken in the third pint of cocoanut milk. If one pint is not enough add a part of the second draining. The first draining would make it too rich. Add one teaspoonful of green ginger, one teaspoonful of curry powder and one teaspoonful of turmeric powder. Simmer until the chicken is tender. Add one teaspoonful of lemon juice and one teaspoonful of salt, and serve.

In the East they never use the skin or giblets.

Chicken Timbale.—Run one-half pound of the uncooked white meat of a chicken through the meat chopper, and if desired extra nice press it also through a sieve. Take one cupful of crumbs from bread at least one day old, dry enough to be rubbed in the hands; add one gill of milk, and cook the two together until it boils. Remove from the fire and add one teaspoonful of salt and a dash of red pepper, and stir in the white meat of the chicken which has been made fine. While the mixture is warm, but not hot, stir in the well-beaten whites of five small or four large eggs. Cut pieces of paper to exactly fit the bottom of the timbale cups and brush them with butter. In filling the cups, a fancy shaped piece of truffle may be placed first, and then the cup filled with the chicken mixture; or the cups may be lined with the mixture, leaving a space in the center, which can be filled with mushrooms or sweetbreads in cream sauce and then covered with the mixture. Stand the cups or moulds in a pan containing hot water. Cover with a thick sheet of paper and place in the oven for twenty minutes.

The sauce served with these is made from one ounce of butter, one tablespoonful of flour and one-half pint of milk; to which, when it boils, is added one-half can

of mushrooms, one-half teaspoonful of salt and one-fourth teaspoonful of white pepper.

SWEDISH TIMBALE.—Make a batter of one cupful of flour, one-half cupful of cold water, one half teaspoonful of salt, one tablespoonful of olive oil and the yolks of two eggs. Beat well and let it stand one-half hour, and then add the beaten whites of the two small eggs. Dip the heated mould into the hot oil, then drain it well; dip it twice into the batter, and fry it in the heated oil until a very light brown. Remove from the moulding iron and stand upside down to drain. These cases are called Bouchées. Fill the cases with creamed chicken, fish, sweetbreads, or lobsters and cream sauce.

This is also a good batter for fruit fritters.

RICE A L'IMPERATRICE.—Boil one cupful of rice until it will mash between the thumb and finger. Drain and pour over it cold water to separate the grains. Dry carefully by tossing. Whip one pint of cream. Dissolve one-half box of gelatin in three tablespoonfuls of milk. Add one-half cupful of powdered sugar and one teaspoonful of vanilla sugar. Sprinkle the rice gently over the cream and then add the gelatin mixture. Beat all together and continue to stir or beat until it retains the outline of the beater. Turn it into a cold mould and stand in a cold place to stiffen. When wanted remove from the mould and serve with fruit placed around the base. Or a lemon jelly can be made and its center filled with the rice.

TOMATO ASPIC MOULDED.—Moisten one and one-half tablespoonfuls of gelatin with three tablespoonfuls of cold water. Boil one pint of tomato juice to which has been added one small onion sliced, one bay leaf, four whole cloves, one teaspoonful of salt, one-fourth teaspoonful of pepper and a small blade of mace. Remove from the fire, add the gelatin to the tomato juice and stir till dissolved; then pour it through a small sieve into small cold moulds. When stiffened turn each one on a lettuce leaf, sprinkle chopped parsley or cress over their tops, and serve with one-half pint of mayonnaise mixed with one-half pint of whipped cream.

The flavoring can be varied in whatever way preferred.

Hygienic Fig Biscuits.—Make a dough of one pint of flour, one ounce of butter, one egg, one tablespoonful of sugar, two teaspoonfuls of baking powder and milk enough to make a dough—nearly two cupfuls—with whole wheat flour. Roll thin and spread with pulp of figs. Bring over the dough, making it like long narrow turnovers about two inches wide. Bake and then cut them into pieces about three and one-half inches long. After being baked put a light weight on them to make them flat.

Brioche.—To one pint, or one-half pound of flour add four unbeaten eggs and five ounces of butter; beat well with the hand and also beat in one biscuit of leaven, made from one cake of compressed yeast as in coffee cake. When thoroughly blended stand aside in a warm place for three hours. Work it down and let it stand another hour. Bake in a well-oiled cake pan in a moderate oven from thirty to forty-five minutes. It makes it very nice to work it down a second time, and then let it stand in the refrigerator one hour before baking.

Jelly Roll.—Beat the yolks of four eggs and gradually add one cupful of sugar; then add the well-beaten whites of the four eggs. Add one cupful of flour, beat and add two tablespoonfuls of boiling water. Stir in one teaspoonful of baking powder, and then spread thin in an oblong baking pan which has been lined with greased paper, and bake from ten to fifteen minutes. Spread with jelly and roll before it is cold.

Mrs. Beeton's English Muffins.—To one quart of milk, one-half teaspoonful of salt, one and one-half ounces of German yeast, add flour enough to make a soft dough, which put in a warm place. When light, make into balls, which place in muffin rings on a floured board until they have grown into the shape of a hemisphere. Invert them upon a greased griddle, and when that side is baked turn it over and bake the other side, all upon the top of the stove.

Muffins should always be pulled apart, as cutting makes them seem heavy.

MRS. MARSHALL'S COCOANUT CAKE.—This cake mixture was put together the same as any other cake, and was made of one-fourth pound of dried cocoanut browned in the oven, one-half pound of butter, one-half pound of sugar, one teaspoonful of vanilla, the peel of one lemon chopped fine, three ounces of rice flour, five eggs, one teaspoonful of coffee essence, one-half teaspoonful of brown coloring, two teaspoonfuls of cocoa and four ounces of flour. This cake mixture was baked in gem pans, and is good served as a pudding with a sauce.

MRS. MARSHALL'S HAM SALAD.—Cover one and one-half tablespoonfuls of gelatin with three tablespoonfuls of cold water. Put over the fire one pint of boiling water, or ham stock freed from fat, and add for flavoring two whole cloves, one sprig of parsley, one bay leaf, one small onion, one teaspoonful of beef extract and salt and pepper to taste. Whip one cupful of cream. Add the stock to the gelatin and then strain the stock and gelatin through a small sieve. Beat it, and when cool add the whipped cream and continue to beat until the mixture will retain the outline of the beater, then add one cupful of ham that has been cooked and chopped fine. When well blended turn into small moulds. To use turn each one on a lettuce leaf and serve with mayonnaise dressing.

MRS. MARSHALL'S PUFF BALLS.—Thicken one pint of milk with one-third of a box of gelatin and flavor it with one-fourth teaspoonful of almond extract. Turn it into a granite baking pan to stiffen. When solid cut it into stars. Whip one pint of cream, add one-half cupful of sugar and stiffen it with one-third of a box of gelatin. Put it in ball or small moulds. When firm, turn each mould on the center of a star and surround the base of the mould with finely chopped almonds.

This Mrs. Marshall is the manager of a school of cookery on Mortimer Street, W. London, England, and

publishes a magazine called "The Table." The recipes are as we made them, and therefore not in her exact words.

We seldom had an opportunity of examining a number of Mrs. Marshall's magazine, or of examining "The American Kitchen Magazine," published in Boston, though we enjoyed both.

CINNAMON BUNS.—We beat two small eggs until light and added one cupful of milk that had been scalded, one ounce of butter, one-half teaspoonful of salt, and when lukewarm we added one cake of yeast that had been dissolved in two tablespoonfuls of lukewarm water and flour enough to make a thin batter. We beat it thoroughly for at least five minutes and then kept it in a warm place until light. When light we stirred in more flour, so as to make a soft dough, and put it on the breadboard and kneaded it lightly for ten minutes. We returned it to the bowl and kept it in a warm place until very light. We then rolled the dough out in one large thin sheet and spread it lightly with butter which had been softened by heat but not melted. We then covered it thickly with sugar and sprinkled it with powdered cinnamon and dried currants. We rolled the dough tightly in one long roll and cut it into two-inch lengths, which we stood on end closely together in a well-oiled pan. We stood the pan where they would keep warm until very light, and then baked them in a moderately quick oven for about thirty minutes. They must be removed from the pan while warm, because the bottom of the whole panful should be covered with the candied sugar or caramel.

QUICK CINNAMON BUNS.—In making the Quick Cinnamon buns we made the dough of one pint of flour, one teaspoonful of baking powder, one egg well beaten, one-fourth teaspoonful of salt, one-half cupful of milk and one-half ounce of butter. We rolled the dough into a thin sheet and spread it with butter, cinnamon, sugar and currants, and then rolled and cut it the same as in making the other buns. Having cut and

put them in an oiled pan we baked them about half an hour.

JUMBLES, No. 1.—We beat six ounces of butter to a cream and gradually added six ounces of powdered sugar; when beaten light we added two well-beaten eggs, one teaspoonful of vanilla, two tablespoonfuls of sherry and six ounces of flour. When beaten thoroughly we put it in a pastry bag and pressed it out in small round cakes upon a well-oiled pan and baked them in a moderate oven from five to eight minutes, until the edges were a delicate brown.

POTATO BISCUIT, No. 2.—We pared and boiled one large potato; put one-half cupful of flour in a bowl and scalded it with one cupful of the water in which the potato was boiled. After beating thoroughly we added the potato, which had been mashed and had one tablespoonful of salt added, and beat it again well. When lukewarm we stirred in one cake of yeast dissolved in one-half cupful of lukewarm water, and after covering we kept it in a warm place until light—about four hours. When light we added two ounces of butter to one pint of milk which had been scalded, and when it was lukewarm we added flour enough to make a dough that could be kneaded, and also added to it the light mixture containing the yeast and kneaded it as we would bread for about fifteen minutes. We kept it in a warm place for two hours. When light we formed it into small biscuits and put them in an oiled pan, not touching each other, and let them stand another hour. We baked them in a quick oven for twenty minutes.

COMPOTE OF APPLES.—We made a syrup of one-half cupful of sugar and one pint of water, cooked the quartered apples in it, and then placed the apples around on the edge of slices of plain bread toast, with shredded pineapple in the center and chopped candied cherries on top. It was served with a sauce made of one level tablespoonful of arrowroot, one-fourth cupful of sugar and one pint of water, flavored to taste either with lemon juice or vanilla, and colored with Dr. Price's rose coloring extract.

This being a sweet entrée it was served warm, not *hot*, before the game, though it is nicer for a lunch than for a dinner.

Gateau St. Honore.—In preparing this dessert, as we had no puff paste prepared, we baked a thin layer of Grafton cake for the base, and also baked some choux paste (which is the same as cream puff batter), which had been dropped from the pastry bag in small balls, about as large in diameter as a five-cent piece. We glacéd the carpels of two oranges. When the cake was cold we fastened the balls of choux paste close to the edge—that is, touching the edge of the cake by first dipping the bottom of the pyramids or balls in melted gelatin and then pressing them firmly upon the cake. We placed the straight edge of the glacéd orange carpels upon the balls, a candied cherry upon the highest part of each carpel, and upon the end of two carpels where they touched each other. The center was then filled with a charlotte, and a few candied cherries scattered over the top.

This dessert presented a very attractive appearance. Any kind of a Bavarian cream could have been used instead of the charlotte.

Vienna Rolls.—In making Vienna rolls we scalded one pint of sweet milk and poured it over two ounces of butter and one level teaspoonful of salt. We dissolved one ounce, or three cakes, of Fleischman's compressed yeast in one-third of a cupful of lukewarm water. When the milk had become lukewarm we added the yeast and flour sufficient to make a batter stiff enough to drop, not pour, and then beat it well until smooth. We kept it in a warm place until light—about one hour. When light we added flour enough to knead, and when well kneaded we divided the dough into small portions and put them to rise between folds of cloth. When light we formed it into rolls for baking. When light, and just before putting in to bake, we brushed the top with equal parts of butter and white of egg. We allowed them to bake in a quick oven from twenty to thirty minutes. We

handled them very lightly and did not use any flour in forming the dough into rolls.

Miss N.'s Ginger Pudding.—One-half cupful of molasses, one cupful of whole wheat flour, one-half cupful of suet, shredded and chopped fine, one-half tablespoonful each of ginger and cinnamon mixed together, one egg, one-fourth of a teaspoonful of soda dissolved in hot water and put in the molasses. When all are thoroughly blended together put in an oiled mould and boil five hours.

Breakfast Gems.—In making these gems we separated two eggs and to the beaten yolks added one cupful of milk, one tablespoonful of melted butter and one-half teaspoonful of salt. We stirred in one cupful of Bond's whole wheat flour, the well-beaten whites of the two eggs and one rounding teaspoonful of baking powder, and after mixing thoroughly we put the mixture in gem pans and baked them about twenty-five minutes in a quick oven.

Griddle Cakes.—In making griddle cakes with whole wheat flour we beat two eggs without separating them; added one pint of milk and one-half teaspoonful of salt; then stirred in one and one-half cupfuls of the flour and added one and one-half teaspoonfuls of baking powder. After beating well we baked them on a hot griddle.

Sweet Milk Biscuits.—In making biscuits with whole wheat flour we added two teaspoonfuls of baking powder and one level teaspoonful of salt to one quart of the flour, and then sifted it. We rubbed in one ounce of butter for shortening and added enough sweet milk to make a soft dough. We rolled the dough into a sheet about one inch thick and cut out the biscuits with a small round cutter. We placed them in a pan so they did not touch each other, brushed the tops of them with milk, and allowed them to bake twenty minutes in a quick oven.

Quick or Peptik Bread.—In making this bread we added one teaspoonful of salt and two and one-half teaspoonfuls of baking powder to one quart of the

whole wheat flour; after sifting twice we made a well in the center and poured in it one pint of water and one tablespoonful of New Orleans molasses. We then gradually stirred in the flour. The dough must be soft, even if a little more water has to be added. After stirring thoroughly we turned it into a well-oiled square pan, and after smoothing over the top we brushed it with melted butter and allowed it to bake one hour and ten minutes in a moderately quick oven. The bread browned at least fifteen minutes; it is considered much more wholesome than yeast bread.

If you should wish to try Bond's Gluten-Germ Whole Wheat Flour, have your grocer order it from Bond's Mills, Fort Wayne, Indiana. They will send you a book containing a number of recipes if you will send them your address.

SUET PUDDING.—In making this pudding we first shredded enough suet to make one cupful; after chopping it fine we stirred into it one-half cupful of sugar and four well-beaten eggs. We then added one teaspoonful of cinnamon, one-half of a grated nutmeg, one cupful of currants and enough of Bond's Gluten-Germ Whole Wheat Flour, with which one teaspoonful of baking powder had been sifted, to make a very stiff batter. We turned the batter into a well-greased mould, placed the mould in a vessel containing water to the depth of about two inches, and boiled it continuously for two hours. This pudding is served hot with a sauce.

All the books of which I gave you the titles in my first letter have various topics of interest in them besides the ones we have studied. Another book which has proved to be very interesting is Dr. Hassall's "Adulterations of Food."

I have already written you about detecting some adulterations, though I have not yet copied for you the ways to detect the adulteration of milk and mustard flour.

Dr. Leffmann said in one article: "To detect an-

natto color in milk, mix a little baking soda in milk and immerse a piece of unsized paper in it; let it stand for a few hours. The immersed part becomes orange. To detect methyl, orange, or coal-tar colors in milk, clean undyed wool should be used, the sample being previously mixed with a little ammonia."

Milk that has been diluted with water will run and drop off quickly from a knitting needle which has been thrust into it, while the drops will be larger and fall more slowly when the milk is pure.

Starch and turmeric being the two things with which mustard flour is usually adulterated, the purity of the flour may be ascertained by testing with iodine, which turns starch blue, and by ammonia, which turns turmeric brown.

Alas! we are seven no longer. One of the girls has left the class, and we are bemoaning the loss of her company, though we understand that in a short time she will practice what she has learned in a home of her own. It seems to be the fashion here for the wealthy young ladies, upon becoming engaged to be married, to take a course in cookery. It certainly is a sensible way of getting ready to direct a household.

Explicit obedience in following directions, and the most exact measurement of materials, are some of the lessons we are learning here for use in after years.

Your affectionate cousin,
VIRGINIA REED.

LETTER XXVII.

April 23, 189–.

My Dear Cousin Alethea: One morning the principal of the school came in and asked us what we could do with various ingredients if we found, some morning, that the refrigerator contained a certain amount left over, so each of us made out the bills of fare for one day and used the various ingredients as well as we could.

She said the skill to make palatable and attractive dishes from "left overs" was one of the marks of excellence of the good cook. Since then, whenever I have thought of or they have spoken of a dish that could be made from "left overs," I have made a note of it, and as my list may be of service to you I will copy it.

Stale Bread can be used in croutons or sippets and in puddings and scalloped dishes; or for stuffing peppers and other vegetables, and meats; or when dried and ground fine they can be used for covering croquettes.

Stale Cake can be heated in a steamer and served with a custard, stewed fruit or whipped cream; or it can be made into Cabinet or General Satisfaction pudding, croquettes or cake soufflé.

Potatoes.—Sweet or white—if whole can be cut into blocks and served as creamed potatoes, or potatoes au Gratin, or Lyonnaise potatoes, or the white ones while hot can be made into potato salad. If mashed they can be made into croquettes, or used to line timbale moulds, or used in a casserole filled with hash, or a fricassee of chicken, or else used in croquettes, or boulettes, or in potato puff.

Hominy grits can be made into croquettes.

Rice can be used in croquettes or gems.

Farina can be used in gems.

Boiled Spinach can be pressed in small moulds and served as a salad.

Boiled Carrots can be sliced and pickled, or chopped and served with mayonnaise in a salad.

Boiled Beets can be put in vinegar and used when wanted in a salad.

Tomatoes can be used in soup, or scalloped, or made into tomato aspic.

Carrots, turnips, celery, onions and potatoes can be chopped and made into vegetable hash.

All cold vegetables make excellent salads with a French dressing, except tomatoes and celery; which require mayonnaise dressing.

Celery in small or green pieces can be made into cream of celery soup.

The shell of pineapple cheese can have macaroni baked and served in it, while scraps of cheese can be made into cheese soufflé for dinner, or into cheese fingers.

The water in which asparagus was boiled can be saved and used in cream of asparagus soup.

All uncooked vegetables should be soaked in cold unsalted water to freshen them.

Stock made without vegetables will keep longer in warm weather than it will if vegetables are used.

Stock for soup can be made from the various bones as follows:

Duck bones can be used for farina soup, puree of carrots, spinach and bisque of turnip.

Chicken bones can be used for apple or almond soup, cream of rice soup, or cream of grits soup, while the tips of the wings, neck and back are added for rice soup or chicken gumbo.

Turkey bones can be used for puree of rice and celery, or with milk in salsify soup.

Goose bones can be used for red cabbage soup or sweet potato soup.

LAMB bones can be used for onion soup or cream of lima beans.

VEAL bones can be used for corn soup.

BEEF bones can be used for the Scotch soup which has oatmeal in it, or for vermicelli soup, or Julienne soup.

MUTTON bones can be used for sago soup, rice soup, or with barley for Scotch broth, while the water in which mutton was boiled can be used for rice, cream of turnip or onion soup.

MEATS "LEFT OVER."—Pieces of duck can be served in terrapin style, or à la Bordelaise, or in a salmi.

Pieces of tongue can be potted or made into croquettes.

Pieces of chicken can be cut up and served with cream sauce on toast, or in timbales, or made into a soufflé, or cecils, or croquettes, or deviled, or in boudins à la Reine, or a pilaff, or used in a salad.

The rougher pieces from chicken or fricassee of guinea can be used in a giblet stew.

Pieces of turkey can be used in a curry or salad.

Pieces of mutton can be used in a curry, cecils, shepherd's pie, pilaff, klopps, or in a Chinese ragout.

Pieces of lamb can be used in boudins.

Pieces of uncooked beef can be made into Hamburg steaks, brown stew with dumplings, or in a cannelon. If cooked it can be used in a ragout, boudins, cecils, croquettes, bobotee, meat rissoles, or in a salad.

Pieces of veal can be scalloped or made into a ragout.

Pieces of fish can be served as Cusk à la Crême, or cut into small blocks and served with cream sauce in timbales, or made into croquettes, or in salad.

Pieces of ham can be barbecued, or chopped and used in ham balls, or omelets, or salad.

Fruit syrups and juices can be used to flavor desserts or pudding sauces.

Jelly in small portions can be used in Queen of all Puddings, or in an omelet, or water-ice, or sherbet.

Preserves can be used in Newport pudding.

I will now write out a few more of the recipes for the dishes we have prepared according to our cards.

LARDED FILLET WITH MUSHROOM SAUCE.—In preparing a larded fillet we first removed all the muscular covering by stripping it back and then cutting it off, with a very sharp knife, from the fillet, which is in reality the tenderloin. We cut larding pork into fine strips for lardoons and tossed them into ice water to harden until wanted. We took one lardoon and inserted one end of it in a larding needle and took a stitch about one inch deep across the center of the fillet, and holding lightly to the exposed end of the lardoon drew the needle through the fillet, in that way leaving about one-fourth of an inch of the lardoon exposed on each side. We made a row of lardoons about one inch apart along the middle of the fillet. We put four cloves, two bay leaves, one stalk of celery cut in pieces, one small onion peeled and sliced, and one small carrot pared and sliced on the bottom of a baking pan, and placed the larded fillet on top of them. We dredged the fillet with pepper and spread butter thickly over it, and having added one teaspoonful of salt to one-fourth cupful of boiling water, poured it in the bottom of the pan and put the pan in a quick oven. We basted it four or five times while it was baking thirty minutes, which is the time a fillet invariably require for proper baking. We removed the fillet to a heated platter and added one ounce of butter to the pan and two tablespoonfuls of flour. When well mixed we added one pint of stock or boiling water and stirred constantly until it boiled; then strained it into a saucepan and added one pint of freshly stewed or canned mushrooms. When they had cooked five minutes we added one teaspoonful of Worcestershire sauce, one tablespoonful of sherry, salt and pepper to taste, and poured it in a bowl to be served with the fillet.

FISH, LARDED AND BAKED.—In preparing a fish for larding and baking we first scraped off all the scales, then made an opening down the belly, removed the

insides, washed it well inside and out, and at once wiped it dry with a clean, dry cloth, and then rubbed it well with salt. We stuffed the fish with a dressing made of one cupful of stale bread crumbs, one tablespoonful of melted butter, one-half teaspoonful of salt, a little black pepper and one tablespoonful of finely chopped parsley, all well mixed together; then we sewed the fish up with soft yarn. We scored one side of the fish with a sharp knife, making the scores parallel about one inch apart, and in each score we placed a strip of salt pork. We greased a tin sheet and put it in the bottom of a baking pan, and having dredged the fish thickly with salt, pepper and flour, placed the fish on the tin, and covering the bottom of the pan with boiling water put it in the oven. We basted it every ten minutes with the gravy in the pan and baked it fifteen minutes to the pound. If all the water should evaporate from the pan, add more. When done we removed the tin sheet and slid the fish carefully from it to the platter on which it was to be served. We garnished it with slices of lemon, fried potato balls and parsley, and served sauce Hollandaise with it, though roe sauce would have been as nice.

Sauce Hollandaise.—In preparing sauce Hollandaise we rubbed two ounces of butter with one tablespoonful of flour until smooth, put it in a double boiler and added gradually one-half pint of boiling water, stirring constantly until it thickened. We removed it at once from the fire, added one-half teaspoonful of salt, and gradually stirred in the beaten yolks of two eggs, then the juice of one-half lemon, one teaspoonful of onion juice and one tablespoonful of chopped parsley. This sauce is also served with boiled fish and fish croquettes. It must be made of *good* butter and used at once.

Stewed Beef's Heart.—In preparing a heart for stewing we soaked it three hours in cold water, removed the muscles and blood from the inside, and then stuffed it with a forcemeat made of one cupful of

bread crumbs, one tablespoonful of chopped parsley, one-half teaspoonful of marjoram, one tablespoonful of melted butter, one-half teaspoonful of salt and two dashes of black pepper mixed together. We wrapped the heart securely with a cloth and sewed the ends together so the stuffing could not escape. We placed the heart point downward in a stewpan, nearly covered it with boiling water and left it to simmer until tender, about three hours. When done there should still be about one pint of water in the stewpan. We removed the cloth and dished the heart. We put one ounce of butter in a frying pan, and when brown added two tablespoonfuls of flour, mixing them well; then added the pint of water in which the heart was boiled, stirring continuously until it boiled; then added salt and pepper to taste. We removed it from the fire, added four tablespoonfuls of sherry and poured the sauce over the heart, which must be served while it is very hot. Currant jelly ought also to be served with beef's heart.

STEWED KIDNEY.—In preparing kidneys for stewing we split them in two equal parts and with a sharp-pointed knife cut out all the sinews and fat; then cut the kidneys into small pieces, which we put in a stew-pan and covered with cold water; then placed it over a moderate fire until it came to the steaming point; then drained off that water and put on fresh cold water and heated it again. We did this three times, being careful not to allow the water to boil, as that would cause the kidney to become hard and tough. We put one ounce of butter in a frying-pan, and when it was a nice brown we added one tablespoonful of flour and then one cupful of stock or boiling water, stirring continuously until it boiled. We then added one tablespoonful of Worcestershire sauce, one table-spoonful of mushroom catsup, salt and pepper to taste, and the kidney. We stirred until the kidney was heated, and then removed it from the fire, added four tablespoonfuls of sherry, and served it at once.

BRAISED CALF'S LIVER.—In braising a calf's liver we

first washed it well and then larded it, with lardoons made from one-fourth pound of larding pork, in the same way as we did the fillet of beef. We pared and cut into slices one carrot, one onion and one turnip, put them on the bottom of a braising-pan, and added one stalk of celery cut in pieces, two sprigs of parsley and one bay leaf. We put the liver on the bed of vegetables and added one pint of stock or water, and having put the cover on the pan we put it in a moderate oven for two hours. We placed the liver on a heated dish. We stirred one ounce of butter in a saucepan till a nice brown, and then added one tablespoonful of flour; when well mixed we strained in the liquid from the braising-pan—about one-half pint. We stirred constantly until it boiled, and then added one tablespoonful of Worcestershire sauce and one tablespoonful of mushroom catsup, poured the sauce around the liver, and it was ready to be served.

BEEF A LA MODE.—We prepared beef à la mode from a four-inch slice of the round weighing about seven pounds. We took out the bone and then sewed a new strip of muslin around the beef to keep it in good shape. We cut deep gashes in the meat about one inch apart, being careful not to cut all the way through. We mixed one teaspoonful of salt, one-half teaspoonful of black pepper, one-half teaspoonful of ground cinnamon, one-fourth teaspoonful of ground mace and one-fourth teaspoonful of ground cloves, and rubbed the mixture into the meat on both sides and put a little in each gash. We cut fat salt pork into pieces the size of the gashes and put one in each gash. We chopped one small onion very fine, added it to one cupful of stale bread crumbs and one tablespoonful of finely chopped parsley, and moistened all with vinegar. We pressed a little of this forcemeat into each gash with the salt pork. We then mixed three tablespoonfuls of vinegar with three tablespoonfuls of olive oil and moistened well both sides of the meat. We next put two large tablespoonfuls of butter in a braising-pan, and when melted and hot we added one onion,

one carrot and one turnip, which had been pared and cut in slices. We stirred until they were lightly browned, and added two tablespoonfuls of vinegar, two bay leaves, one sprig of parsley, two quarts of boiling stock or water, and let it boil two minutes; we then put in the round of beef and one knuckle of veal well cracked. We put the cover on the braising-pan and baked it for six hours in an oven at about 220° Fahr. When done we removed the meat and put it to cool. We strained the liquor from the braising-pan into an oblong granite pan, and having added salt and pepper to taste, left it to harden. The meat was served cold, with squares of the jelly, which should be amber-colored, around it, and garnished with parsley and small radishes cut to represent tulips. If put in a cold, dry refrigerator, this meat will keep two weeks.

CHICKEN CUTLETS.—In preparing chicken cutlets we removed the skin from the breast of a young chicken that had been singed and drawn. We cut off the wings at the middle joint; that is, the second from the body, then run the knife along the breast bone, taking off one-half the breast with the first joint of the wing as a handle. We removed the other side for a cutlet in the same way. The dark meat when cooked is used for other dishes. We put the dark meat in a stewpan, nearly covered it with boiling water, and added one small onion peeled and sliced, one bay leaf, four whole cloves and one sprig of parsley. We placed the cutlets in good shape on the top, and having covered the pan, left them to simmer until tender, which is told by piercing them with a fork. When done we removed the cutlets, dusted them with salt and pepper, and basted them with one tablespoonful of melted butter. When ready to use them we dipped them first in beaten egg and then in bread crumbs and fried them in steaming oil until a golden brown. We trimmed the bones with a frill of paper, placed them near the edge of the meat dish, poured cream sauce in the center of the dish, and they were ready to be served.

LOBSTER CHOPS.—In preparing lobster chops we added one tablespoonful of chopped parsley, one-fourth of a grated nutmeg and salt and cayenne to taste to two cupfuls of boiled lobster. We put one cupful of cream or milk on to heat, and rubbed one ounce of butter with three tablespoonfuls of flour and added them to the steaming cream, stirring constantly, and then added the beaten yolks of two eggs. When it had cooked about two minutes it had thickened sufficiently, so we removed it from the fire and stirred in the seasoned lobster, and when well mixed we turned it out on a platter to cool. When cold we formed it into chops and dipped them in beaten egg and then in bread crumbs. We put them in the frying basket and immersed them in heated oil, and in about two minutes they were a nice brown. After draining them we arranged them on a heated dish, using a small claw to represent the bone, and garnished them with parsley. They can be served with either cream or tartare sauce.

SAUCE TARTARE.—In preparing sauce tartare we chopped three olives, one gherkin and one tablespoonful of capers very fine, and added them to one cupful of mayonnaise dressing. We could also have added one-half teaspoonful of powdered coriander seed or one tablespoonful of tarragon vinegar.

FRENCH CRULLERS.—In making French crullers we cut up two ounces of butter and put it with one cupful of cold water in a stewpan over the fire; as soon as it boiled we added four ounces of flour quickly and stirred until the flour all left the pan and adhered to the wooden spoon in a ball. We removed it from the fire, and after giving it a thorough beating, stood it in a warm place for thirty minutes. We then added one unbeaten egg, beat the mixture smooth, and then added another unbeaten egg and beat again until smooth, and so continued to do until we had added four small eggs, or three large ones. We beat the mixture for five minutes and then covered and kept it in a warm place for another thirty minutes. We

mixed one cupful of powdered sugar with one teaspoonful of powdered cinnamon. We floured the baking board, put one tablespoonful of the cruller mixture on it and rolled the mixture until it was one-fourth of an inch thick; we cut it with a round cutter and then removed the center with a smaller cutter. We lifted carefully with the cake turner and slid it into steaming hot oil. When one side had fried until brown we turned it and let the other brown. After draining we rolled it in the cinnamon and sugar. This mixture seemed exceedingly soft, but before we had made it all into crullers we got so that we could manage it without adding much flour. The less flour added the nicer—more delicate—they are.

GERMAN CRULLERS.—In making German crullers we beat two eggs until light and continued to beat while we added one cupful of sugar; then added one cupful of thick sour cream, one-half teaspoonful of salt, and one teaspoonful of vanilla; when well mixed we added gradually three cupfuls of sifted flour which had been sifted with one heaping teaspoonful of baking powder. When well mixed we rolled it out on the board, cut it with a large round cutter and removed the centers with a smaller cutter. We dropped them into the steaming hot oil and fried them brown, first on one side and then on the other. When done and drained we dusted them with powdered sugar. This dough also was exceedingly soft, but we soon learned to manage it with the spatula, and so did not touch the cut dough with our hands.

DOUGHNUTS.—In making doughnuts we scalded one pint of milk and added to it two ounces of butter; when it had cooled we added one-half cupful of sugar, one teaspoonful of salt, one-half cake of compressed yeast dissolved in lukewarm water, and flour enough to make a soft dough. We beat it thoroughly and kept it in the covered bread-raiser until light; we then stirred in three well-beaten eggs and added flour enough to make a soft dough, which after kneading lightly we covered and kept in a warm place until

light. We then took out part of the dough, which we rolled and cut into doughnuts with holes in the center. We spread a clean cloth on the table, and having placed the doughnuts on it, covered them up and let them be for thirty minutes, in which time we rolled out the remainder of the dough. We were careful to put the doughnuts upside down into the steaming hot oil, because a crust formed over the surface while standing which if left uppermost would prevent the doughnuts from puffing up properly. When browned on both sides and drained we dusted them with powdered sugar.

When oil is kept expressly for frying mixtures of dough, mutton suet can be added, as many think it makes a nicer crust. We used the "butter oil" alone and everything fried was very nice.

MINCE PIE.—In making mince pie we lined a deep pie dish with puff paste, made as I told you in my sixth letter, and filled it with the mince-meat I told about in my seventeenth letter. The mince-meat was thinned a little with cider or wine. We covered the pie with an upper crust of the paste and brushed the center of the top of the pie lightly with the beaten yolk of egg. We lifted the edges of the paste from the dish with a knife, being careful not to press the paste along the outer edge of the rim of the dish, as that would prevent it from puffing up properly. Indeed, we never touch puff paste when it can be avoided. The pie was baked one-half hour in a quick oven.

LEMON CUSTARD.—In making a lemon custard we lined a deep pie plate with puff paste and placed it in the refrigerator while we made the custard. We beat the yolks of three eggs with one cupful of sugar and added the juice and grated yellow rind of one lemon. We put one tablespoonful of flour in a bowl and added gradually one cupful of milk, stirring all the time, and when well mixed we poured it through a small sieve into the eggs and sugar. We stirred and then poured this mixture into the paste lined plate, and baked it half an hour in a quick oven. We beat the whites of

three eggs until stiff, then gradually beat in three tablespoonfuls of powdered sugar and continued to beat until it was stiff and glossy. When the pie was done we placed this meringue by spoonfuls over the pie and returned it to the oven to brown.

BAKED CHICKEN PIE.—In baking a chicken pie we used one chicken, weighing about four pounds, that had been drawn, singed and cut into eleven pieces as for a fricassee. We put the chicken in a stewpan, covered it with boiling water and left it to simmer until the meat was tender when pierced by a fork. We cut one-half pound of ham into small squares, pared four medium-sized potatoes, cut them into cubes, parboiled them fifteen minutes and drained them, and chopped one tablespoonful of parsley. We lined a two-quart tin pan or basin with puff paste and cut the pieces that came from trimming the edge into squares. We put potato blocks over the bottom of the pan and then a layer of chicken, a sprinkling of ham, the squares of paste, a sprinkling of chopped parsley, salt and pepper and bits of butter. We repeated these layers until all the ingredients were used. We used for the filling one ounce of butter. We rolled out a crust for the top, cut a hole in the center, moistened the edge of the pie with cold water, put on the top crust, pressed the edges together and baked it in a quick oven until the crust was done—about one-half hour. While the pie was baking we made a sauce from one ounce of butter, with which we rubbed two level tablespoonfuls of flour without letting it brown. We added one cupful of the liquor in which the chicken was cooked and one cupful of milk, stirring continuously until it boiled; then added salt and pepper to taste, removed it from the fire and added the beaten yolk of one egg and one tablespoonful of chopped parsley. When the pie was done we poured this sauce into the pie through a funnel placed in the hole in the top crust. The pie was served in the dish in which it was baked.

Rabbit, veal and squirrel pies are made in the same

way, using two rabbits or four squirrels in the place of one chicken.

PHILADELPHIA STEWED TERRAPIN.—In stewing terrapin the Philadelphia way we put two terrapins, *alive*, into a large kettle of boiling water and boiled them until we could pull off the outer skin and toe nails—about fifteen minutes. Having removed the skin and toe nails we put the terrapins into fresh boiling water, added one heaping teaspoonful of salt and left them to boil slowly until the shells parted easily and the flesh on the legs was tender. When done we took them from the water, removed the under shell and let them stand until cold enough to handle. When cold we took them from the upper shells and carefully removed the sand bags, bladders, the thick, heavy part of the intestines, and also the gall bag, which was found imbedded in one lobe of the liver, and threw them away. We were exceedingly careful about removing the gall bags, because if they should get broken the gall would spoil the whole terrapin. We broke the terrapins into small pieces and cut the small intestines, or pipes, as they are called, into short pieces, and also broke up the liver and added it, with the eggs found in the terrapins, to the meat. We put all into the stewpan and added the juice or liquor they had given out while being cut. We rolled eight ounces of butter in flour and added it to the terrapin, which we placed over a very moderate fire until heated through. We removed the yolks from six eggs which we had boiled fifteen minutes, and made a smooth paste with the yolks and two tablespoonfuls of wine, and added to the terrapin, together with one cupful of thick cream, one-fourth teaspoonful of powdered mace, and salt and pepper to taste. We removed it from the fire and added one gill of sherry or Madeira. More wine can be added if desired, but it must not boil after the wine is added.

SWEETBREADS A LA BÉCHAMEL.—In preparing sweetbreads la Béchamel we put them in cold water as soon as they came from market. After soaking one

hour we removed all the fat, put them in boiling water in a porcelain kettle, added one teaspoonful of salt, and let them parboil over a moderate fire for fifteen minutes. We then put them in cold water for five minutes, after which we removed all the fibrous skin and fat and picked them into small pieces. We put one ounce of butter in a saucepan, and when melted but not browned we added one tablespoonful of flour, mixed it smooth and added one gill of white stock and one gill of cream, stirring constantly until it boiled. We then added one-half can of mushrooms chopped fine and the sweetbreads. We removed it from the fire and added the beaten yolks of two eggs, one-half teaspoonful of salt, two dashes of white pepper and one tablespoonful of sherry. It was served in a small heated dish, though it could have been served in individual cases. A calf's brains could have been parboiled, mashed and added to the sauce, as many persons consider them a great improvement.

Baked Sweetbreads and Peas.—In preparing the sweetbreads we put five lardoons in each of them after soaking them one hour in cold water; then parboiled them fifteen minutes. We placed them in a small baking pan, dredged them with salt, pepper and flour, and covered the bottom of the pan with stock or water, and baked them forty-five minutes in a moderate oven, basting them every ten minutes. When they were almost done we put one ounce of butter in a saucepan, and when it had melted but not browned we added one tablespoonful of flour; when we had mixed it smooth we added one cupful of milk and stirred constantly until it boiled. We then added one can of French peas drained free from liquor, and stirred until they boiled. We placed the sweetbreads in the center of the dish and poured the peas around them.

Boned Chicken.—In boning chickens we used two one year-old chickens. After singeing them we cut off the heads, and after removing the tendons at the third joint from the body we cut off the feet. We

placed a chicken with its breast on the table, and taking a firm hold of the skin under the neck we cut the skin down the whole length of the neck and back to the rump, and then carefully slipped the knife between the bones and flesh toward one of the wings. We unjointed the thin bone and joint nearest the body, and running the knife between the flesh and bone, took out each bone as we came to the joint. The small bones at the tip of the wings cannot be taken out, so they are left, though sometimes they are cut off. We then kept the knife close to the bones until we came to the joint of the leg next the body. This joint required the leg to be turned and twisted considerably before we found just where the tendons were that held it. The bones of the leg were removed in the same way as the wing, only much easier, because there is more flesh on them and so less likelihood of cutting the skin. The second joint can be turned wrong side out and the bone stripped down. We removed the flesh from the bones till we came to the breast bone. We then boned the other side of the chicken and, after pulling out the crop, we removed the flesh from the breast bone with the finger till we came to the edge of the bone; then having started to separate the gristle from the bone with a knife we took the neck in one hand, and the skin and flesh in the other, and gently pulled them apart. After removing the carcass we cut off the rump, leaving it attached to the flesh and skin. We wiped the skin with a dampened towel, to be sure it was clean; then spread the chicken out flesh side up and dredged it with salt and pepper. We chopped the meat of the other chicken fine and mixed with it one-half pound of sausage meat, one tablespoonful of chopped parsley, one cupful of stale bread crumbs, one teaspoonful of salt, one teaspoonful of onion juice and one-fourth teaspoonful of pepper. We put a small portion of this forcemeat in the cavity made in the wings and legs by the removal of the bones. The remainder of the forcemeat we made into the shape of the carcass

and placed it in the boned chicken; then drew the skin together and sewed it with an over and then an under stitch. We tucked the wings back and drew the legs down to the side of the body, and pressed it with our hands into the shape of a chicken before being boned. We wrapped the chicken in a piece of cheesecloth and then wrapped it securely with twine and tied it so the forcemeat could not get out. We put the bones of both chickens, and the skin of the one, into a kettle and added cold water enough to little more than cover them. We added a knuckle of veal, one bay leaf, one onion, four whole cloves, one sprig of parsley, twelve peppercorns, one small-sized carrot that had been pared and sliced. We put the kettle over a moderate fire, skimmed as soon as it boiled, and then added salt. We placed the boned chicken on top of the bones and left it to simmer four hours. When done we removed the cloth, placed the chicken in a baking pan, and having dusted it with salt and pepper, browned it half an hour in a quick oven. It was garnished with parsley and served with sauce tartare. This is the best way for hot weather. White celery tops also make a pretty garnish. After the chicken had simmered four hours and been removed, we simmered the bones two hours longer, and then strained the liquor and put it to cool. There should be two quarts of liquor for the jelly; if there was not so much, water would have been added to make the quantity. When a knuckle of veal has not been added a box of gelatin can be dissolved in one pint of cold water and used. After the fat was removed from the jelly, the jelly should be melted, and if gelatin was to be used it should have been added and stirred until thoroughly dissolved, and seasoned with salt and pepper. The jelly should then be poured into a pan until it was one-half inch deep; when cold and firm it should be chopped and scattered over the chicken till it was one-half inch thick—the chicken having previously been placed on a flat dish on which it was to be served. The remainder of the jelly should be cut

into one-inch blocks, or some fancy shape, and used to ornament the edge of the dish or platter. Or, the jelly might have been placed in a mould and when set, the chicken, which was cold, could have been placed on it, the rest of the jelly poured over and around it, and then placed where it would soon harden. When wanted, the mould could have been wiped *quickly* with a cloth wrung out of warm water, and the chicken in jelly turned out carefully, garnished with parsley, and served with sauce tartare. Chicken served in or with this jelly must be served as soon as arranged, as this jelly will not remain firm long in warm weather.

If jelly had not been made from the liquor in which the chicken was boiled, it could have been used for soup.

Your affectionate cousin,

VIRGINIA REED.

LETTER XXVIII.

April 30, 189–.

My Dear Cousin Alethea: I will now write out the remainder of the recipes we have had.

Fruit Cake.—In making fruit cake we seeded two pounds of raisins, looked over two pounds of "Purity" currants and cut fine three-fourths of a pound of candied citron. We mixed the raisins, currants and citron together, floured them well, and then beat ten eggs together until very light. We beat one pound of butter to a cream, added one pound of sugar and beat again, continuing to beat while we added the ten eggs and then one pound of flour, one grated nutmeg, one teaspoonful of powdered allspice, one-half teaspoonful of powdered cloves, one-half teaspoonful of powdered mace and one teaspoonful of powdered cinnamon; we gave the whole a thorough beating and then added the floured fruit. We also added the juice and rind of one orange and one lemon, mixed all well together, and then poured the mixture into two round cake-pans which we had lined with paper and oiled well. They require to be baked four hours in a very moderate oven. When liquor is used one gill of brandy is added before the fruit.

Plunkets.—In making plunkets we selected four eggs, weighed out their weight in powdered sugar, their weight in butter and their weight in rice flour; but when rice flour cannot be obtained one-fourth of their weight could be cornstarch and three-fourths pastry flour. We then beat the butter to a cream and continued to beat while we gradually added the powdered sugar, then the beaten yolks of the four eggs,

then the stiffly beaten whites, after which we added the flour a little at a time. We added one teaspoonful of vanilla, though we might have used the juice and grated rind of one lemon instead. After everything had been added we continued to beat until the mixture was very fine and light, then we poured it into small, well-oiled tins and baked them about twenty minutes in a moderate oven. Fluted oval tins are the correctly shaped tins for plunkets.

Cream Sponge Cake.—In making cream sponge cake we made the filling first. We put one cupful of milk on to heat. We beat the yolks of three eggs until light, together with two tablespoonfuls of sugar and one and one-half tablespoonfuls of cornstarch, and poured over them the steaming milk and stirred until it thickened. We removed it from the fire and added two tablespoonfuls of orange juice and the grated rind of one-half orange. We put the filling away to cool while we made the cake.

We selected six eggs and weighed out their weight in sugar and one-half their weight in flour. We broke and separated the six eggs very carefully, beat the yolks until light, added the sugar and beat until very light, then added the stiffly beaten whites, and after mixing carefully we slowly sifted in the flour. We stirred one-fourth teaspoonful of baking soda into one tablespoonful of vinegar, and when it was dissolved we stirred it quickly into the cake; after mixing thoroughly we turned the mixture into a well-oiled shallow pan and baked it fifteen minutes in a quick oven. When the cake was done we turned it upside down and while warm spread it with the filling. We cut the cake into two equal portions and folded the bottoms together, thereby having a two layer cake with a thick layer of filling between. We then iced the cake with orange icing.

Orange Icing.—Orange icing was made by putting one-half pound of powdered sugar in a bowl and adding the grated rind of one orange, one tablespoonful of boiling water, and orange juice enough to moisten. The icing was very stiff and was spread on at once.

MERINGUES.—In making meringues we beat the whites of four eggs until very stiff and dry, and then added carefully one-fourth pound of powdered sugar which had been sifted and one teaspoonful of vanilla sugar. We mixed them thoroughly but very lightly. We heaped the meringue by the tablespoonful upon greased paper and placed the paper upon a board one inch thick. We dusted them lightly with sugar, then fanned off what sugar we could and put them in a moderate oven until a light-fawn color. We opened wide the oven door, but left the meringues in the oven one hour longer to dry. When done we removed them from the paper with a spatula, and then using a teaspoon we scooped out the bottom and center, which were still soft. They were inverted and returned to the oven to dry the interior, for when thoroughly dried and put in a box they will keep a long time. When wanted for use they can be filled with whipped cream or ice cream and two pressed together.

CHOCOLATE ECLAIRS.—In making chocolate eclairs we made a batter the same as for cream puffs, which I wrote about in my twenty-third letter. We put the batter in a pastry bag and made the eclairs about five inches long by pressing firmly, all the time squeezing the bag while drawing it toward us. We left a space at least two inches wide between them. We used a well-oiled baking pan and baked them about twenty minutes in a quick oven. When done they felt light when lifted, for in fact they were hollow. When cold we filled them with the cream puff filling and then iced the bottom of them with chocolate icing.

CHOCOLATE ICING.—We melted two ounces of chocolate, added four tablespoonfuls of powdered sugar and stirred until it formed a paste. We had the icing in a broad, shallow vessel, which we placed in another containing hot water while we dipped the bottom of each eclair flat down in the icing and then stood it away to dry.

Eclairs are also nice if filled with whipped cream or preserved fruits and iced with orange icing.

ENGLISH PLUM PUDDING.—In making English plum pudding we first seeded one pound of raisins, looked over one pound of "Purity" currants, chopped fine one pound of suet, and minced one-half pound of candied orange peel. We mixed well together the one pound of seeded raisins, the one pound of currants, one pound of chopped suet and one-half pound of candied orange peel finely cut, with the one-fourth pound of brown sugar, one pound of flour, three-fourths of one pound of stale bread crumbs, one-half of a grated nutmeg and the grated rind of one lemon. We then beat five eggs together until very light, added to the eggs one-half pint of brandy, poured it over the dry ingredients and mixed them together thoroughly. We packed the mixture to within one inch of the top of small tin pails which had been well-greased, and having put on their lids, boiled them six hours after making and another six hours just before using. They could have been boiled longer at the making and so would only have required to be thoroughly reheated. When removed from the boiling water we took off the lids to let the steam escape. They can be served with hard sauce, flavored with brandy, or with Our Cooking School sauce.

OUR COOKING SCHOOL SAUCE.—In making this sauce we beat six ounces of butter to a cream, then beat in one-fourth of a pound of sugar and added the yolks of three eggs. When we had beaten until it was very light and frothy we added one-half pint of wine, one gill of boiling water and grated nutmeg to taste. We placed the bowl containing all the ingredients in a pan of boiling water over the fire and stirred constantly for five minutes. It was served hot.

CREAM CHOCOLATE PUDDING.—In preparing a cream chocolate pudding we put two ounces of chocolate in a double boiler and stirred it until perfectly smooth. We put one pint of milk on in another double boiler and moistened four level tablespoonfuls of cornstarch with about four tablespoonfuls of cold water and added it to the steaming milk, stirring it until

thick and smooth. We added one-half cupful of sugar to the milk, then the stiffly beaten whites of four eggs, and beat well together before removing the mixture from the fire. After removing from the fire we added one teaspoonful of vanilla. We took out one-third of the mixture and added it to the chocolate, mixing it well. We chilled a plain pudding mould by dipping it in cold water; we poured one half of the white mixture into the mould, then all the chocolate mixture, and after that the remainder of the white mixture. We put it in a cold place or on the ice to harden. When served it had been turned from the mould and had had vanilla sauce poured around it.

The vanilla sauce was made from the yolks of the four eggs, with one pint of milk, two tablespoonfuls of sugar and one teaspoonful of vanilla, in the same way I wrote you in my twenty-second letter.

NEWPORT PUDDING.—For the Newport pudding we pared and cored six medium-sized apples and steamed them until tender. While they were steaming we boiled the fourth of a cupful of water with one-half cupful of sugar and the juice of one orange for five minutes. When the apples were tender we placed them in the bottom of a two-quart baking-dish, poured the boiling syrup over them and let them stand to cool while we put one pint of milk on to heat. We beat the yolks of three eggs with one-half cupful of sugar, stirred them into the heated milk, and after removing it from the fire we added six macaroons, pounded fine, and one teaspoonful of vanilla. We filled the space left by the removal of the cores with preserves, then poured the custard over the apples and baked them fifteen minutes in a moderate oven. We beat the whites of three eggs with three tablespoonfuls of powdered sugar until very stiff, and then heaped them over the top of the pudding and returned it to the oven to brown. This pudding was served very cold in the dish in which it was baked.

VANILLA ICE CREAM.—In making vanilla ice cream we put one pint of cream in a double boiler over the

fire, and added one-half pound of granulated sugar and one vanilla bean split into halves, and stirred continuously for ten minutes. We removed it from the fire and took out the bean, which we scraped with a blunt knife, and put the seeds and soft part from the inside of the bean into the heated cream; after mixing thoroughly we stood it away to cool. When cold we added another pint of cream, and having seen that the can and dasher were in the proper position, we poured the cream into the freezing-can, put on the cover, fastened the crank, and gave it a turn to be sure that it was all right. We used a "Crown" ice chipper in chipping the ice. We put a three-inch layer of fine ice around the can, then a one-inch layer of coarse or rock salt, and continued to alternate the ice and salt till we reached the top of the can. We turned the crank slowly and steadily. It took about twenty-five minutes to freeze. When frozen we removed the crank, and after wiping the lid took it off carefully, so that no salt could get into the can. We took out the dasher and scraped it off, and then with the wooden spatula scraped the cream from the side of the can, and beat and worked the cream steadily for ten minutes to make it smooth. We then put the lid back on the can and put a cork in the hole from which the dasher was taken. We drained the water from the tub and repacked with salt and ice and covered the tub with a piece of carpet and stood it away in a cold place for one or two hours to ripen. When ready to be served the can was dipped quickly into cold water, and after being wiped off the cream was turned out on a dish.

It takes about ten pounds of ice and two quarts of salt to properly freeze a four-quart freezer of cream.

Baked Ice Cream.—One of the class asked about baked ice cream; so they told us that after ice cream had been made, moulded and left to ripen, we should see that the oven was very hot, and then make a meringue by beating the whites of eggs until very stiff. When the ice cream had been turned from the mould upon the dish on which it was to be served, it

should be quickly covered with a thick meringue and the dish placed on a thick board and put into a very hot oven and left there until the meringue becomes a light brown. It is also sometimes called an Alaska bake.

ICED RICE PUDDING WITH A COMPOTE OF ORANGES.—In preparing this pudding we rubbed one-half cupful of rice in a clean towel and put it on to boil in one pint of cold water; after it had boiled thirty minutes we drained off that water, poured one pint of milk over the rice and left it to boil thirty minutes longer. We whipped one quart of cream, which we kept in a cold place till wanted, and added the small portion that would not whip to the rice and milk. When the rice was done we pressed it through a sieve and put it back in the double boiler. We beat the yolks of six eggs with one and one-half cupfuls of sugar until light, and poured over the boiling rice, and after stirring well we placed it over the fire until it began to thicken—about two minutes. We removed it from the fire and added one tablespoonful of vanilla, or one-half as much vanilla sugar, and turned it out to cool. When cold we put it in the freezer and froze it the same as the vanilla ice cream. When frozen we stirred in the whipped cream, and after removing the dasher we smoothed it down and let it stand two hours, packed in the salt and ice, to ripen.

FOR THE COMPOTE.—We put one pound of sugar on with one gill of water, and as it boiled we skimmed it. When it had boiled ten minutes we added the juice of one-fourth of a lemon to keep the sugar from granulating. We had peeled one dozen sweet oranges and cut them in halves crosswise, removing the cores with a sharp knife. We put a few pieces of the oranges at a time into the hot syrup, and then placed them singly on a flat dish, and when all had been so treated we poured over them the remainder of the syrup and stood them on the ice to cool.

In dishing the pudding we removed the can from the ice, wiped it carefully with a dry cloth, then wiped

the bottom of the can with a towel dipped in boiling water, and having removed the lid and placed a round dish over the can, we inverted the can and left the frozen rice upon the dish. We arranged the oranges around the base and over the top of the pudding, poured the syrup over them, and it was served at once.

MONTROSE PUDDING.—In making Montrose pudding we heated one pint of cream in a double boiler. We beat together the yolks of six eggs and one cupful of granulated sugar until light, then stirred them into the steaming cream and stirred until it thickened—about one minute. We removed it from the fire and added another pint of good cream and one tablespoonful of vanilla, and when it had cooled we put it in the freezer and froze it. When frozen, instead of smoothing it down and letting it ripen in the can, we packed it in a round mould, leaving a well in the center, which we filled with strawberry water-ice, and then covered the water-ice with pudding taken from the center, being careful to entirely fill the mould. We then bound the edge of the mould with letter paper, put on the lid, covered the joint with a strip of muslin dipped in melted butter, and then packed it in salt and ice and left it to ripen until wanted, at least two hours.

This pudding was served with Montrose sauce poured around it.

STRAWBERRY WATER-ICE.—The strawberry water-ice was made by adding one pound of sugar and the juice of two lemons to one quart of strawberries, and after they had stood one hour, one quart of water was added, and they were strained through a cloth and frozen slowly; when the dasher can no longer be turned it is removed, the sides of the can scraped down and the water-ice thoroughly beaten. It was then put in the well left in the pudding in the center of the mould.

MONTROSE SAUCE.—In making Montrose sauce we covered one heaping tablespoonful of gelatin with two tablespoonfuls of cold water and let it soak thirty minutes. We put one pint of cream to heat in a

double boiler, while we beat the yolks of three eggs with one-fourth cupful of powdered sugar until light. We stirred the eggs into the steaming cream and stirred until it thickened—about a minute—and then added the gelatin and continued to stir until it dissolved. We removed it from the fire and added one teaspoonful of vanilla. When liquor is used two tablespoonfuls of brandy and four tablespoonfuls of sherry would be added. When well mixed we stood it away to cool.

CARAMEL.—In making caramel, which is a Neapolitan ice cream, and differs only from the Philadelphia ice cream in having eggs added to the cream, we beat the yolks of six eggs until creamy, added one-half pound of granulated sugar, beat until very light, and then stirred in the stiffly beaten whites of the six eggs. We put one quart of cream on to heat in a double boiler, and when steaming we added the beaten eggs and sugar and three tablespoonfuls of caramel, made as I told you in my twenty-fourth letter. We stirred constantly until the mixture began to thicken, then removed it from the fire, strained it through a fine sieve and let it stand until cold; then added one teaspoonful of vanilla, poured it into the freezer and froze it the same as any Philadelphia ice cream.

ORANGE SOUFFLÉ.—In making orange soufflé we let one-half box of gelatin soak with one-half cupful of cold water for one hour, then added one-half cupful of boiling water and stirred until it dissolved. We mixed one pint of orange juice with one pound of sugar, and the next thing we did was to whip one quart of cream. We beat the yolks of six eggs to a cream and then mixed the orange juice and sugar with the yolks of eggs in a tin or thin granite vessel, which we placed in a pan of ice water. We strained the gelatin into the granite vessel and stirred until it began to thicken, then we quickly stirred in the whipped cream and turned it into an ice cream mould, which we packed in salt and ice and let it freeze for two hours. It should not be frozen as hard as ice

cream. It is served with Montrose sauce poured around it. The above quantity will serve ten.

An endless variety of soufflés can be made from this rule by changing the flavoring and adding sugar to correspond.

Lemon Water-Ice.—In making lemon water-ice we put one and one-fourth pounds of sugar on to boil with one quart of water. When it boiled we skimmed off the scum and added the chipped yellow rind from three lemons and one orange to the syrup, let it boil five minutes and put it aside to cool. We squeezed out the juice from four lemons and one orange, being careful to reject all the seeds, and mixed this juice with the syrup, which we strained through a fine cloth. We turned it into a freezer which we packed as for ice cream. We turned the crank slowly for a few minutes, then rested for about five minutes, then turned again for a short time and stopped for five minutes, and continued so to do until the water-ice was frozen pretty hard. It took much longer to freeze a water-ice than it did an ice-cream. When we could turn no longer we removed the dasher, scraped down the sides of the can, and gave the water-ice a thorough beating with a wooden spatula or paddle. We put the cork in the lid of the can, drew the water from the tub and repacked it, then covered with carpet and left it two or three hours to ripen—to become mellow and smooth. This quantity will serve six.

When fruit jelly is used instead of fresh fruit, one pint of jelly and one half pound of sugar are used to each quart of water.

Frozen Apricots.—In preparing apricots for freezing we drained one quart can free from juice, and with a silver spoon removed the stones and cut up the apricots. We added one cupful of sugar to the syrup and enough water to make one and one-half pints. We covered two tablespoonfuls of gelatin with cold water and let it soak thirty minutes. We boiled the sugar, syrup and water for five minutes, skimmed

carefully, added the gelatin, stirred until it dissolved, and then strained all through a sieve to be sure no gelatin was undissolved. We then added the apricots and stood the mixture aside to cool. When cold we turned it into the freezer and froze it. When frozen we added one pint of cream which we had whipped, and after blending the two we removed the dasher and finished in the same way as a water-ice, leaving it two hours to ripen. This quantity was sufficient for ten persons.

FROZEN STRAWBERRIES.—In preparing frozen strawberries we added one pound of granulated sugar to one quart of strawberries and the juice of two lemons, and let it stand one hour. We then mashed the berries and added one quart of water and stirred until the sugar was dissolved. We then turned the mixture into a freezer and froze it *slowly*, having packed the freezer as for ice cream.

Fresh fruits require twice as much sugar as canned.

CHARLOTTE RUSSE.—In preparing charlotte russe we first put one-half box of gelatin to soak with about one-fourth cupful of cold water for thirty minutes. We whipped one quart of good cream, which we put on a sieve to drain. We lined two plain two-quart moulds with one-fourth pound of lady fingers. We made them stay in place by touching them lightly to dissolved gelatin and then pressing them against the mould. We turned the whipped cream into a thin granite vessel, which we placed in a pan of ice water or on ice. We next added a little boiling water to the gelatin—just enough to dissolve it. We added three-fourths of a cupful of powdered sugar to the cream, and also one teaspoonful of vanilla and one-half gill or four tablespoonfuls of sherry, and then strained in the gelatin. We commenced at once to stir, and stirred from the sides and bottom of the vessel until it began to thicken and would retain the outline of the beater, then we poured it into the moulds and placed them on the ice to harden.

ORANGE SHERBET.—In making orange sherbet we covered two tablespoonfuls of gelatin with cold water, and when it had soaked thirty minutes we added one quart of boiling water and one pound of sugar, which we stirred over the fire until it boiled and was skimmed, and then put it aside to cool. When cold we added the juice of twelve oranges and strained it through a fine sieve. When cold we turned it into a freezer, packed it as for ice cream, and turned the crank rapidly and steadily until the mixture was frozen rather hard. We then took out the dasher and added the meringue made by beating the white of one egg to a froth and adding to it one tablespoonful of powdered sugar and beating again until it stood alone. After stirring the meringue into the sherbet we beat it well, then covered and repacked the freezer and let it stand to ripen.

If we had wanted the sherbet served in a form we would have chilled the mould by dipping it in cold water, and then have filled the mould with the frozen mixture, packing it well into the designs. We would have put white letter paper over the open end, put the lid on, pressed it down tightly, and then have packed it in ice and salt. When wanted we would have washed the mould in cold water, and, after removing the lid, turned the sherbet out on a plate. If it had happened to stick we would have waited a short time or have washed it again in cold water. Under no consideration would we have dipped the mould containing sherbet into hot water, as that would certainly have spoiled the shape of the form, no matter how quickly it was done.

The instruction is ended and examination has begun. We have had written examination for several mornings, and among other things have had to make out the menus for three meals for four days for an editor, and those for a student for three days, as well as those for an over-fat man and for a consumptive for two days. We have had certain marketing to do, and

have had such dishes to prepare as they have assigned us; that, in fact, means the preparing of an entire meal; and to show our knowledge of table serving we have also had to serve a meal prepared by another member of the class.

In a few more days we will have received our diplomas and be ready to begin instructing others in the science of preparing attractive and palatable viands. It seems to me that the main work now to do is to educate people to know what is the suitable food for them. Cooks and housekeepers would then not receive so much undeserved blame, for the health of the household depends greatly upon the *individual's selection* of the food placed before him. What good or help to a person can all the delectable concoctions amount to when he will not touch them, and, for instance, persists in eating nothing in the vegetable line but boiled greens and potatoes, as I recently heard the lady of a house state was the case with her husband.

I certainly think a housekeeper ought to know that she has the proper articles properly prepared for her family, and that the young are instructed as to what is best under the various conditions of health and environment; but beyond that I think *each* person should be held accountable for the use or abuse of nature's provisions.

I am expecting to make two short visits on the way home, but hope to see you within two weeks at the furthest.

Your affectionate cousin,

VIRGINIA REED.

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